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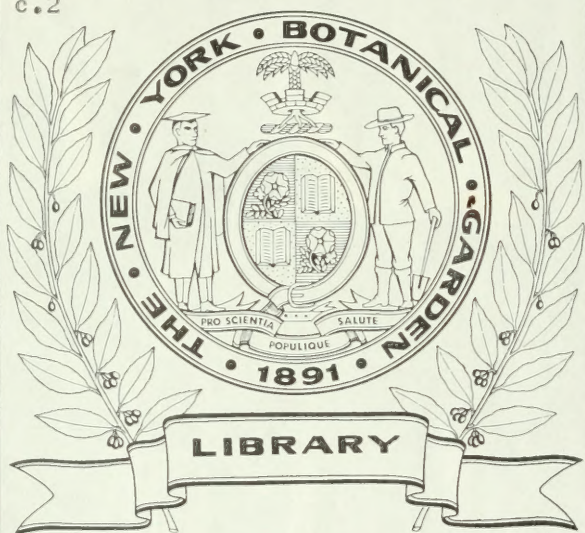


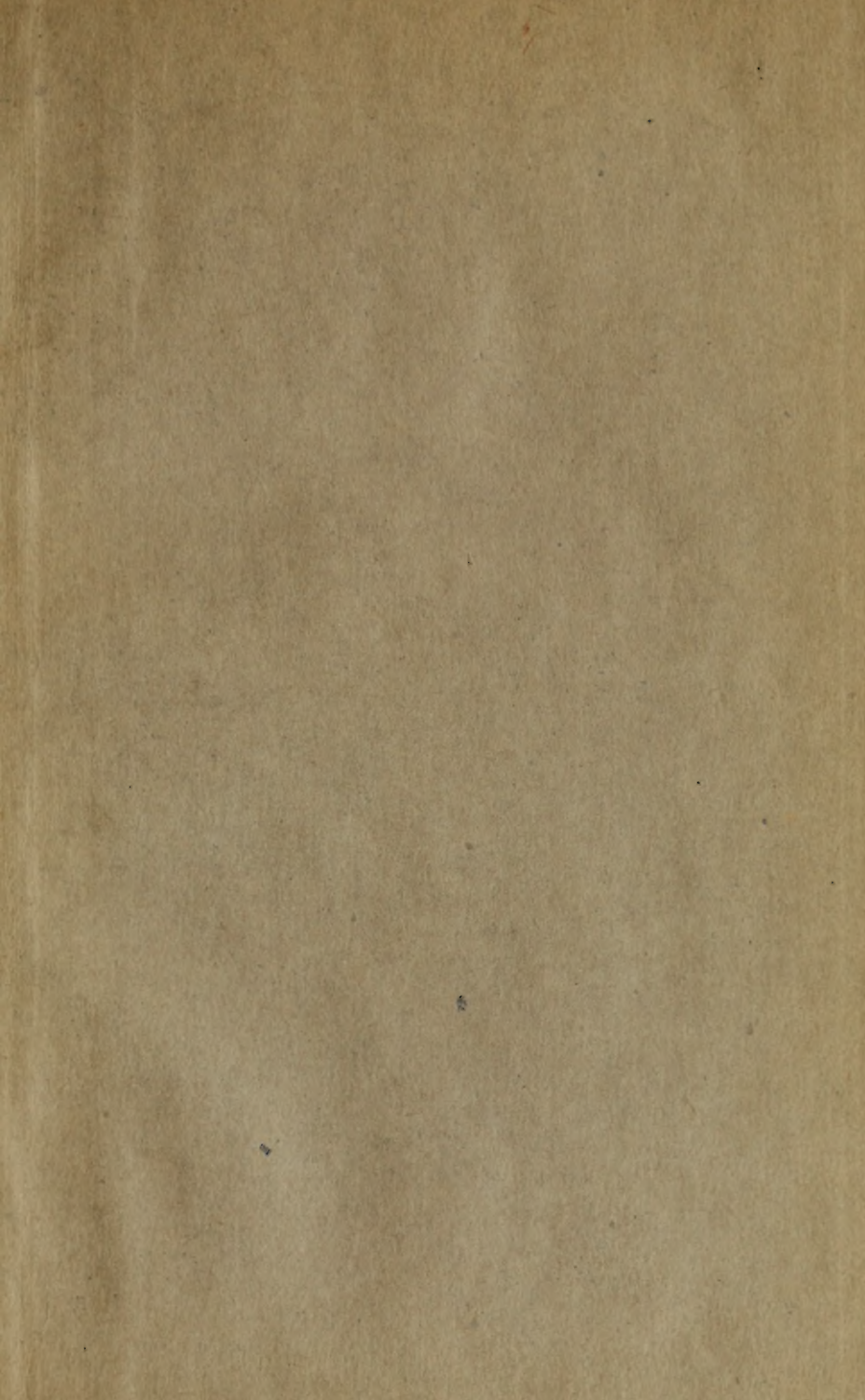
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# Proceedings

of the

## Ohio State Academy of Science

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### The Agaricaceae of Ohio

BY

WILMER GARFIELD STOVER, A. M.

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VOLUME V, PART 9

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Special Paper No. 18





# The Agaricaceae of Ohio

A Preliminary Report, with Keys  
to the Genera and Species.

Contributions from the Botanical Laboratory  
of Miami University, VIII.

By

WILMER GARFIELD STOVER, A. M.

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## INTRODUCTION.

The Agaricaceae constitute a rather large family of the Basidiomycetae and are commonly known as the "gill fungi." The family is characterized by having the spores borne on club-shaped *basidia* arranged in a definite layer known as the *hymenium*, which covers a number of radiating plates, the *lamellae* or "gills", suspended from the lower surface of the *pileus*, or cap. A *stipe*, or stem, is usually present, but may be wanting.

Many of the species are edible, and some are considered a great delicacy. Others are poisonous, and may cause serious illness or even death. A few are parasitic upon certain higher plants, notably upon the roots or trunks of trees, when they may cause extensive injury to the timber. Many are beautifully colored, red, yellow, purple, brown, white, etc., or quite large, or otherwise striking in appearance. For these reasons and others these plants are interesting objects of study.

The present paper is essentially a preliminary report on the Agaricaceae of Ohio and consists of keys to the genera and species reported as occurring within the state. A glossary of descriptive terms and a bibliography of the literature pertaining to the Ohio species and other works, which will be found helpful to the student, are included.

The list of species has been made up from the works (see bibliography) of Lea, Morgan, Hard, Lloyd, Peck, Berkeley, Kellerman and Montagne. Besides the species thus published, the list has been augmented by reference to specimens in the herbarium of the New York Botanical Garden, the herbarium of the state botanist of New York, the herbarium of the Ohio State University and by the collections of the writer.

Thomas G. Lea collected in southwestern Ohio, 1834-1844, and sent his specimens to Rev. M. J. Berkeley, in England, who described a number of new species from them. Others were referred to existing species. Morgan, a number of years later

(1878-1907), collected in the same region. He greatly extended Lea's list (although he did not recognize all the species previously reported by Lea) and described a number of new species. W. S. Sullivant, an eminent bryologist of Columbus, sent a number of collections to Montagne in Paris during the early fifties, some of them with drawings by Mr. Sullivant or by Mr. Robinson who worked with him. Montagne described fifty-five new species from these specimens. It seems remarkable that none of these species have been certainly recognized since. Most of them are probably to be referred to other species, or at least are now recognized by other names.

Peck has described species based on specimens sent to him by Ohio collectors, Morgan, Lloyd, Kellerman and others. Some of Peck's New York species have also been found in Ohio. His types are all, or nearly all, preserved in the state herbarium at Albany. Hard collected in several parts of the state and published his results in a well illustrated book. Professor Atkinson, of Cornell University, also described several species from material sent to him by Kellerman and Hard.

The list at present includes approximately five hundred and forty (540) species. Some of these are of doubtful determination. In many cases the collections were not preserved, and it is impossible at this date to confirm or correct the determination. The type specimens of Montagne have not been available to the writer for study, and, except for a few species of *Marasmius*, Morgan's types were not preserved. Whether these will all prove to be valid species must be left for future study to determine.

Moreover, the list is not claimed to be complete. There are doubtless many species occurring in the state which have not yet been reported, for some sections have scarcely been worked over at all. Before it is possible to have a fairly complete and reasonably accurate state list, there must be a large number of specimens from different parts of the state assembled in accessible herbaria, preferably, the state herbarium. If notes on the fresh plants accompany each specimen, the collection will have much greater value.



In preparing the keys, the most apparent characters possible have been employed. The aim has been to produce accurate and usable keys, rather than to exhibit relationships of species. Some of the keys have been tested by use by mycology students at Miami University for several years and at the Ohio State University during the present year. Most of them have been revised several times as suggested by use.

The work is based largely on published descriptions, and in some cases altogether. These are sometimes so brief or so lacking in precise detail that it has been difficult to find reliable and well-marked characters upon which to separate species. This is especially true of species founded wholly upon dried specimens.

Notwithstanding such errors, misconceptions and incorrect conclusions as doubtless occur, it is believed that the paper will prove helpful to students, amateur mycologists and others in the determination of Ohio Agarics. It is offered as a summary of our present knowledge of the Ohio plants, and is to be regarded as only a preliminary study.

It is not within the scope of this paper to discuss the species in detail, so that many points of interest and of some importance must necessarily be omitted. With each species included, however, a list of references to the most available and useful works is given. One or more of these should always be consulted before reaching a decision as to the determination of any plant.

The matter of the classification and nomenclature of the Agaricaceae is still in an unsettled condition. It has seemed best in most instances to follow the arrangement given by Saccardo in his *Sylloge Fungorum* for two reasons: It is not the purpose to present a critical study of the nomenclature of the family, and most of the available works on this group will be found to follow a similar system.

The writer wishes here to acknowledge his many obligations to Dr. Bruce Fink under whose direction the work was undertaken. He is also indebted to Dr. W. A. Murrill for the privilege of examining specimens in the herbarium of the New York

Botanical Garden; to C. H. Peck for the determination of a number of species, and for the privilege of studying type specimens in the herbarium of the state botanist at Albany; to Mr. S. H. Burnham, his assistant; to Miss Gertrude S. Burlingham, of Brooklyn, for aid in the determination of species of *Russula* and *Lactaria*; to Mr. C. G. Lloyd for library privileges in the Lloyd Library at Cincinnati; to Mr. William Holden, librarian, for many courtesies while consulting literature; to Professor T. H. Macbride for the loan of the specimens of *Marasmius* in the Morgan collection, now at Iowa City, Iowa; to Mrs. Laura Vaile Morgan for the loan of Mr. Morgan's manuscript; and to others in various ways.

Columbus, Ohio, July, 1911.

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### ABBREVIATIONS.

(*See bibliography for full titles.*)

- A.—Atkinson: Mushrooms.  
B. T.—Bulletin of the Torrey Botanical Club.  
H.—Hard: The mushroom edible and otherwise.  
J. M.—Journal of Mycology.  
K.—Kauffman: Russulas of Michigan.  
M.—Morgan: Mycologic flora of the Miami Valley.  
M. B.—New York State Museum Bulletin. (See bibliography: Peck, C. H.)  
Mc.—McIlvaine: One thousand American fungi.  
M. S. M.—Memoir of the New York State Museum. (See bibliography: Peck, C. H.)  
N. A. F.—North American Flora, Vol. 9, Part 3.  
Oh. Nat.—Ohio Naturalist.  
P. R.—Peck: Reports of the state botanist of New York.  
S.—Saccardo: Sylloge Fungorum (volume 5, unless otherwise stated.)  
St.—Stevenson: British fungi (volume 1, unless otherwise stated.)



# KEY TO THE GENERA.

Spores white (sometimes yellow or ochraceous, lilac or pale pink; cinnabar-red in one species and *green* in another)

**Leucosporae** (473)

Spores rosy, salmon-colored or rosy-rust-colored

**Rhodosporae** (475)

Spores ochraceous, yellowish-brown or brown-rust-colored

**Ochrosporae** (476)

Spores purple, purple-brown or black... **Melánosporae** (478)

## LEUCOSPORAE.

A.<sup>1</sup> Plants corky, tough, leathery or fleshy-leathery; persistent or reviving when moistened.

B.<sup>1</sup> Plants corky; hymenium often porose at first, becoming lamellate; lamellae often branched and anastomosing.

**Lenzites** (543)

B.<sup>2</sup> Plants not corky, lamellae never porose.

C.<sup>1</sup> Edge of lamellae split into two laminae.

**Schizophyllum** (543)

C.<sup>2</sup> Lamellae not as above.

D.<sup>1</sup> Pileus differing from stipe in texture, or easily separable from it.

E.<sup>1</sup> Pileus gelatinous-leathery.

**Heliomyces** (532)

E.<sup>2</sup> Pileus fleshy and tough or thin and leathery ..... **Marasmius** (533)

D.<sup>2</sup> Stipe, if present, continuous with pileus, but may be absent.

E.<sup>1</sup> Lamellae obtuse and fold-like.

**Trogia** (543)

E.<sup>2</sup> Edge of lamellae acute.

F.<sup>1</sup> Edge of lamellae serrate or notched.

**Lentinus** (539)

F.<sup>2</sup> Edge normally entire... **Panus** (541)

A.<sup>2</sup> Plants fleshy or somewhat so; soon putrescent, not reviving when moistened.

B.<sup>1</sup> Stipe eccentric, lateral or wanting....**Pleurotus** (513)

B.<sup>2</sup> Stipe central or subcentral.

C.<sup>1</sup> Edge of lamellae obtuse; lamellae thick or vein-like.

D.<sup>1</sup> Lamellae decurrent, usually dichotomous.

**Cantharellus** (531)

D.<sup>2</sup> Lamellae not decurrent; plants parasitic on other Hymenomycetes.....**Nyctalis** (532)

C.<sup>2</sup> Edge of lamellae acute.

D.<sup>1</sup> Universal veil membranous, usually leaving a volva at base of stipe, or more rarely breaking up into patches or scales which are evident on surface of pileus.

E.<sup>1</sup> Annulus present as a ring about the stipe.

**Amanita** (480)

E.<sup>2</sup> Annulus wanting.....**Amanitopsis** (482)

D.<sup>2</sup> Volva wanting.

E.<sup>1</sup> Annulus present.

F.<sup>1</sup> Pileus confluent with stipe; lamellae attached .....**Armillaria** (491)

F.<sup>2</sup> Pileus distinct and easily separating from stipe; lamellae usually free.

**Lepiota** (482)

E.<sup>2</sup> Annulus wanting.

F.<sup>1</sup> Trama floccose (of interwoven fibers).

G.<sup>1</sup> Lamellae waxy, not easily splitting into two layers.

**Hygrophorus** (516)

G.<sup>2</sup> Lamellae fleshy, readily splitting into two layers.

H.<sup>1</sup> Stipe fleshy or fibrous elastic, confluent with pileus and of same texture.

I.<sup>1</sup> Lamellae sinuate.

**Tricholoma** (492)

- I.<sup>2</sup> Lamellae usually decurrent,  
sometimes adnate at least  
when young.

**Clitocybe** (497)

- II.<sup>2</sup> Stipe cartilaginous, confluent  
with pileus but of different  
texture.

- I.<sup>1</sup> Lamellae decurrent; pileus  
umbilicate.

**Omphalia** (511)

- I.<sup>2</sup> Lamellae not truly decurrent;  
pileus not umbilicate or  
rarely so.

- J.<sup>1</sup> Pileus typically campanu-  
late; margin straight  
from the first; la-  
mellae adnate or un-  
ciniate.

**Mycena** (508)

- J.<sup>2</sup> Pileus not campanulate,  
usually convexo-plane;  
margin at first in-  
rolled; lamellae free  
or obtusely attached.

**Collybia** (502)

- I.<sup>2</sup> Trama vesiculose (hyphae often en-  
larged, in sections giving the appear-  
ance of rounded cells).

- G.<sup>1</sup> Plants with a milky or colored juice.

**Lactaria** (519)

- G.<sup>2</sup> Plants with watery juice.

**Russula** (525)

**RHODOSPORAEE.**

- A.<sup>1</sup> Stipe eccentric or wanting.

- B.<sup>1</sup> Pileus large, usually glabrous; lamellae white or whitish.

**Pleurotus** (513)

- B.<sup>2</sup> Pileus medium, downy to hairy; lamellae orange-yellow.  
**Claudopus** (548)
- A.<sup>2</sup>. Stipe central or subcentral.
  - B.<sup>1</sup> Edge of lamellae obtuse; thick and veinlike.  
**Cantharellus** (531)
  - B.<sup>2</sup> Edge of lamellae acute.
    - C.<sup>1</sup> Universal veil leaving a volva at base of stipe.  
**Volvaria** (543)
    - C.<sup>2</sup> Volva wanting.
      - D.<sup>1</sup> Lamellae free; pileus easily separating from  
stipe..... **Pluteus** (544)
      - D.<sup>2</sup> Lamellae normally attached (in some becoming  
nearly free); pileus confluent with stipe.
        - E.<sup>1</sup> Lamellae decurrent.
          - F.<sup>1</sup> Stipe fleshy-fibrous... **Clitopilus** (546)
          - F.<sup>2</sup> Stipe cartilaginous; pileus umbilicate.  
**Eccilia** (547)
        - E.<sup>2</sup> Lamellae not decurrent.
          - F.<sup>1</sup> Lamellae sinuate; stipe fleshy-fibrous.  
**Entoloma** (545)
          - F.<sup>2</sup> Lamellae not sinuate; stipe cartilaginous.
            - G.<sup>1</sup> Pileus campanulate; margin straight  
from the first... **Nolanea** (547)
            - G.<sup>2</sup> Pileus convexo-plane; margin at first  
inrolled ..... **Leptonia** (547)

#### OCHROSPORAE.

- A.<sup>1</sup> Lamellae dissolving at maturity into a gelatinous or powdery  
condition ..... **Bolbitius** (561)
- A.<sup>2</sup> Lamellae not dissolving.
  - B.<sup>1</sup> Lamellae readily separating from substance of pileus;  
margin of pileus inrolled..... **Paxillus** (560)
  - B.<sup>2</sup> Lamellae not readily separating from pileus.
    - C.<sup>1</sup> Edge of lamellae obtuse; thick and vein-like.  
**Cantharellus** (531)



C.<sup>2</sup> Edge of lamellae acute.

D.<sup>1</sup> Arachnoid (cobwebby) veil present; often disappearing with age. . . . **Cortinarius** (557)

D.<sup>2</sup> Arachnoid veil absent.

E.<sup>1</sup> Stipe lateral, eccentric or wanting.

**Crepidotus** (556)

E.<sup>2</sup> Stipe central or subcentral.

F.<sup>1</sup> Partial veil normally leaving an annulus.

**Pholiota** (548)

F.<sup>2</sup> Annulus wanting.

G.<sup>1</sup> Trama vesiculose; pileus usually bright-colored, yellow, red or purple . . . . . **Russula** (525)

G.<sup>2</sup> Trama floccose; pileus variously colored.

H.<sup>1</sup> Lamellae free.

**Pluteolus** (554)

H.<sup>2</sup> Lamellae normally attached, sometimes becoming nearly free with age.

I.<sup>1</sup> Stipe fleshy or fleshy-fibrous.

J.<sup>1</sup> Lamellae adnate or decurrent.

**Flammula** (553)

J.<sup>2</sup> Lamellae sinuate or mostly so.

K.<sup>1</sup> Pileus glabrous, often viscid.

**Hebeloma** (552)

K.<sup>2</sup> Pileus fibrillose, silky or scaly, dry.

**Inocybe** (550)

L.<sup>2</sup> Stipe cartilaginous.

J.<sup>1</sup> Lamellae adnate or adnixed.

K.<sup>1</sup> Pileus conical or campanulate, margin straight from the first.

**Galera** (555)

K.<sup>2</sup> Pileus convexo-plane, margin at first inrolled.

**Naucoria** (554)

J.<sup>2</sup> Lamellae decurrent.

**Tubaria** (556)

# MELANOSPORAEE.

A.<sup>1</sup> Spores purple or purple-brown.

B.<sup>1</sup> Partial veil present.

C.<sup>1</sup> Veil forming an annulus.

D.<sup>1</sup> Lamellae free; pileus easily separating from stipe .....**Agaricus** (562)

D.<sup>2</sup> Lamellae attached; pileus continuous with stipe.  
**Stropharia** (564)

C.<sup>2</sup> Veil mostly appendiculate to margin of pileus, slight annulus rarely formed.....**Hypholoma** (565)

B.<sup>2</sup> Partial veil absent, or soon evanescent.

C.<sup>1</sup> Lamellae free from stipe.....**Pilosace** (566)

C.<sup>2</sup> Lamellae attached.

D.<sup>1</sup> Lamellae decurrent .....**Deconica**\*

D.<sup>2</sup> Lamellae not decurrent.

E.<sup>1</sup> Pileus conic to campanulate, margin straight from the first; stipe fragile.

**Psathyra** (567)

E.<sup>2</sup> Pileus usually becoming convex or expanded, margin at first inrolled; stipe more or less rigid .....**Psilocybe** (566)

A.<sup>2</sup> Spores black or blackish-brown.

B.<sup>1</sup> Lamellae deliquescent at maturity into an inky fluid or into fine lines.....**Coprinus** (567)

B.<sup>2</sup> Lamellae not deliquescent.

C.<sup>1</sup> Spores globose to elliptic; lamellae not decurrent.

D.<sup>1</sup> Annulus present; variegated lamellae exceeding  
the margin ..... **Anellaria** (570)

D.<sup>2</sup> Annulus wanting.

E.<sup>1</sup> Pileus striate, membranous; lamellae uni-  
form in color..... **Psathyrella** (571)

E.<sup>2</sup> Pileus not striate, fleshy; lamellae variegated  
in color, extending beyond margin of  
pileus ..... **Panaeolus** (570)

C.<sup>2</sup> Spores fusiform; lamellae decurrent; plants glutinous  
or viscid ..... **Gomphidius**\*

No Ohio species reported.

# KEY TO THE SPECIES.

## AMANITA PERS.

- A.<sup>1</sup> Volva persistent as a loose cup about base of stipe; pileus not scaly from remnants of volva.
  - B.<sup>1</sup> Pileus orange-red or yellow; lamellae yellow. S. 8; H. 40; M. 57; Mc. 12; A. 70; P. R. 33:41.  
*A. caesarea* Scop
  - B.<sup>2</sup> Pileus white, rarely yellow or brownish, never orange-red; lamellae white.
    - C.<sup>1</sup> Stipe bulbous; margin of pileus even.
      - D.<sup>1</sup> Stipe rooting; spores elliptical. S. 14:64; H. 28; Mc. 10; P. R. 50:96.  
*A. magnivelaris* Peck
      - D.<sup>2</sup> Stipe not rooting; spores globose or subglobose.
        - E.<sup>1</sup> Pileus dry; lamellae adnexed; volva circularly split. S. 10; H. 35; Mc. 10; St. 4.  
*A. mappa* Fr.
        - E.<sup>2</sup> Pileus viscid or slightly so when moist; lamellae free; volva bursting at top, not circularly split.
          - F.<sup>1</sup> Lamellae broad; stipe nearly smooth. S. 9; H. 20; Mc. 7; A. 55; St. 4; P. R. 33:42.....*A. phalloides* Fr.
          - F.<sup>2</sup> Lamellae linear-lanceolate; surface of stipe torn into scales; pileus often lobed. S. 9; H. 23; Mc. 6; A. 61; St. 3.....*A. virosa* Fr.
    - C.<sup>2</sup> Stipe not bulbous; margin of pileus narrowly striate. S. 12; H. 43; Mc. 11; P. R. 33:42; A. 69.  
*A. sprata* Peck
  - A.<sup>2</sup> Volva forming a closely fitting or adnate sheath, or concentric rings about base of stipe, or wholly friable; pileus usually with warty scales.



- B.<sup>1</sup> Flesh becoming reddish when wounded; pileus dingy reddish to tan; volva wholly friable. S. 16; M. 58; Mc. 21; H. 38, 39; A. 71; St. 8; P. R. 33:44.

*A. rubescens* Fr.

- B.<sup>2</sup> Flesh not so changing.

- C.<sup>1</sup> Stipe stuffed or hollow.

- D.<sup>1</sup> Pileus orange or yellow, rarely white.

- E.<sup>1</sup> Margin of pileus widely tuberculate-striate; pileus yellow or straw-yellow. S. 13; P. R. 33:43; Mc. 18....*A. russuloides* Peck

- E.<sup>2</sup> Margin narrowly striate or striatulate.

- F.<sup>1</sup> Pileus more than 6 cm. broad; spores elliptical. S. 13; H. 23; M. 58; Mc. 14; A. 52; P. R. 33:43.

*A. muscaria* Linn.

- F.<sup>2</sup> Pileus less than 6 cm. broad; spores globose. S. 14; H. 26; Mc. 16; A. 74; P. R. 33:44....*A. frostiana* Peck

- D.<sup>2</sup> Pileus white to brownish, or rarely with tinge of yellow.

- E.<sup>1</sup> Margin of pileus even; stipe rooting. S. 14; H. 64; H. 28; Mc. 10; P. R. 5:9.

*A. magnivelaris* Peck

- E.<sup>2</sup> Margin striate or striatulate; stipe not rooting.

- F.<sup>1</sup> Pileus white; stipe bulbous; spores globose. A. 66; H. 37.

*A. cothurnata* Atk.

- F.<sup>2</sup> Pileus olive-brown to livid; stipe nearly equal, spores elliptical. S. 14; M. 58; Mc. 17; St. 6.....*A. pantherina* De.

- C.<sup>2</sup> Stipe solid.

- D.<sup>1</sup> Stipe deeply rooting.

- E.<sup>1</sup> Lamellae free. S. 16:2; H. 31, 33; B. T. 27: 609-10.....*A. radicata* Peck

- E.<sup>2</sup> Lamellae adnexed. S. 15; Mc. 19; H. 28: 30; A. 72.....*A. solitaria* Fr.

D.<sup>2</sup> Stipe not rooting; bulb massive. S. 15; H. 32,  
33, 36; St. 7; Mc. 19; P. R. 33:46.

*A. strobiliformis* Vitt.

DOUBTFUL SPECIES.

*A. flavo-rubens* B. & M., described from specimens collected at Columbus by Sullivant, has not been since reported. As suggested by Lloyd, it is doubtless a form of *A. muscaria*. S. 17.

*A. daucipes* B. & M., also described from Sullivant's material, is placed in *Amanitopsis* by Saccardo, and in *Lepiota* by Morgan. It is probably a variety of *A. solitaria*. Not reported since Sullivant's time. S. 26.

*A. polypyramis* B. & C. is placed in *Lepiota* by Morgan who reports it from Preston, O. As stated by Morgan and suggested by Atkinson, it is probably a form of *A. solitaria*. S. 18.

Morgan regards *A. radicata* as a form of *A. solitaria* but places it in *Lepiota*. J. M. 13:12.

*A. verna* is regarded by most writers as a variety of *A. phalloides*. *A. virosa* is also so regarded by some.

AMANITOPSIS ROZ.

Volva persistent; pileus not mealy, more than 4 cm. broad.

Pileus sulcate on margin, glabrous; spores globose or sub-globose. S. 21; H. 43; M. 58; Mc. 28; P. R. 33: 47; A. 74; St. 11.....*A. vaginata* (Bull.) Roz.

Pileus striate only, floccose-scaly; spores elliptical. S. 23; M. 58; Mc. 31; P. R. 33:47.....*A. volvata* (Peck) Sacc.

Volva breaking up into floccose scales; pileus mealy, less than 4 cm. broad. Mc. 31; A. 76; P. R. 33: 49.

*A. farinosa* (Schw.)

LEPIOTA FR.

A.<sup>1</sup> Pileus viscid or glutinous.

B.<sup>1</sup> Pileus 3-4 cm. broad; stipe solid; lamellae broad. J. M. 12:203 .....*L. glischra* Morg.

B.<sup>2</sup> Pileus 1-3 cm. broad; stipe fistulous; lamellae narrow. J. M. 12:202.....*L. candida* Morg.

A.<sup>2</sup> Pileus dry; not viscid.

B.<sup>1</sup> Plants changing color when bruised, or markedly so in drying.

C.<sup>1</sup> Plants becoming bluish; pileus usually less than 3 cm. broad. S. 16:9; J. M. 12:246; B. T. 26:63.

*L. coeruleascens* Peck

C.<sup>2</sup> Plants not becoming bluish; pileus more than 3 cm. broad.

D.<sup>1</sup> Pileus 3-5 cm. broad; flesh becoming reddish when bruised, whole plant reddish when handled and finally blackish when dried; stipe not bulbous or clavate. J. M. 12:246.

*L. rufescens* Morg.

D.<sup>2</sup> Pileus 5-10 cm. or more broad; plants not becoming blackish; stipe bulbous or clavate.

E.<sup>1</sup> Flesh only becoming reddish when broken; pileus not umbonate; margin even. S. 29; M. 61; J. M. 13:8; St. 14; Mc. 35.

*L. rhacodes* Vitt.

E.<sup>2</sup> Whole plant becoming reddish or reddish-brown; pileus broadly umbonate; margin more or less striate. S. 43; H. 49, 50; Mc. 48; M. 62; A. 80; P. R. 35:159; J. M. 13:9 ..... *L. americana* Peck

B.<sup>2</sup> Plants not changing color as above.

C.<sup>1</sup> Pileus with erect, pointed scales; annulus somewhat cobwebby.

D.<sup>1</sup> Pileus brown. S. 34; H. 55; M. 62; J. M. 12:200, 201; A. 81, 82; Mc. 40; P. R. 35:154.

*L. acutesquamosa* Weinm. *L. asperula* Atk

D.<sup>2</sup> Pileus white. J. M. 12:202. *L. gemmata* Morg.

C.<sup>2</sup> Pileus and annulus not as above.

D.<sup>1</sup> Pileus usually more than 8 cm. broad.

E.<sup>1</sup> Lamellae and spores green. S. 31; H. 50; J. M. 12:201; Mc. 37; A. 80; St. 15; J. M. 13:8

*L. morgani* Peck

E.<sup>2</sup> Lamellae usually white or yellow, spores white; never green.

F.<sup>1</sup> Lamellae narrow, adnate; pileus granulate. S. 48; H. 52, 53; M. 63, pl. 3; J. M. 12:196... *L. granosa* Morg.

F.<sup>2</sup> Lamellae broad, free; surface of pileus breaking up into large scales; annulus movable.

G.<sup>1</sup> Pileus umbonate; stipe furfuraceous-scaly. S. 27; H. 46; M. 60; St. 13; A. 79; Mc. 35; J. M. 13:7; P. R. 35:152.....*L. procera* Scop.

G.<sup>2</sup> Pileus not umbonate; stipe smooth or nearly so. S. 29; M. 61; St. 14; Mc. 35; J. M. 13: 8.

*L. rhacodes* Vitt.

D.<sup>2</sup> Pileus less than 8 cm. broad.

E.<sup>1</sup> Pilei mostly more than 2 cm., and less than 8 cm. broad.

F.<sup>1</sup> Pileus glabrous.

G.<sup>1</sup> Flesh thick; lamellae white, soon dingy or smoky-brown; annulus movable. S. 43; H. 48, 49; M. 63; St. 21; A. 77; Mc. 44, 45; J. M. 13: 10; P. R. 35: 160.

*L. naucina* Fr.

*L. naucinoides* Peck

G.<sup>2</sup> Flesh thin; lamellae white.

H.<sup>1</sup> Pileus bright brownish red. M. 62; J. M. 12:245; P. R. 35: 155.....*L. rubrotincta* Peck

H.<sup>2</sup> Pileus not as above.

I.<sup>1</sup> Stipe mealy. S. 50; St. 25; J. M. 12: 157.

*L. seminuda* Lasch



I.<sup>2</sup> Stipe more or less fibrillose.

J.<sup>1</sup> Pileus buff or umber;  
margin even; lamellae  
broad. J. M. 12:248.

*L. ncophana* Morg.

J.<sup>2</sup> Pileus white or rufous in  
the center; margin  
striatulate; lamellae  
rather narrow. S. 49;  
J. M. 12:157.

*L. noscitata* Britz.

F.<sup>2</sup> Pileus granulose, furfuraceous or more  
or less scaly.

G.<sup>1</sup> Pileus deeply striate, sulcate or pli-  
cate.

H.<sup>1</sup> Flesh thick; lamellae adnate. S.  
48; H. 52, 53; J. M. 12:196;  
M. 63, pl. 3.

*L. granosa* Morg.

H.<sup>2</sup> Flesh thin; lamellae free or ad-  
nexed only.

I.<sup>1</sup> Pileus granulose; lamellae  
adnexed. S. 47; H. 52;  
J. M. 12:196; St. 23; Mc.  
49; P. R. 35:161.

*L. granulosa* Batsch

I.<sup>2</sup> Pileus scaly; lamellae free.

J.<sup>1</sup> Lamellae subdistant; veil  
yellow. J. M. 13:5.

*L. flavescens* Morg.

J.<sup>2</sup> Lamellae very close.

K.<sup>1</sup> Annulus movable. S.  
33; St. 16; Mc.  
37; J. M. 13:2.  
M. 61.

*L. mastoidea* Fr.

K.<sup>2</sup> Annulus fixed (not movable).

L.<sup>1</sup> Stipe enlarged above the base. S. 43; St. 22; Mc. 40; P. R. 35; 158; H. 54.

*L. cepaestipes*  
Sow.

L.<sup>2</sup> Stipe not so enlarged. S. 38; J. M. 12:108; St. 19; Mc. 43; P. R. 35; 157.

*L. metulispora* B. & Br.

G.<sup>2</sup> Pileus even or only striatulate.

H.<sup>1</sup> Flesh thick; lamellae white, soon dingy-brown; annulus movable. S. 43; H. 48, 49; St. 21; J. M. 13:10; A. 77; Mc. 44; P. R. 35:160.

*L. naucina* F.

*L. naucinoides* Peck

H.<sup>2</sup> Flesh thin.

I.<sup>1</sup> Pileus mealy or granulose; lamellae adnexed or reaching stipe.

J.<sup>1</sup> Pileus reddish-brown or reddish yellow. S. 47; H. 42; St. 23; J. M. 12:196; P. R. 35:161.

*L. granulosa* Batsch

J.<sup>2</sup> Pileus whitish or flesh color.

K.<sup>1</sup> Stipe squamulose. S.  
46; St. 22; M. 63;  
J. M. 12: 196.

*L. carcharias* Pers.

K.<sup>2</sup> Stipe mealy. S. 50;  
St. 25; J. M. 12:  
157.

*L. seminuda*

Lasch

I.<sup>2</sup> Pileus minutely or appressed  
scaly; lamellae free.

J.<sup>1</sup> Stipe glabrous or slightly  
fibrillose.

K.<sup>1</sup> Pileus white or whit-  
ish. S. 40; M. 63,  
pl. 3; J. M. 12:  
242.

*L. miamensis*

Morg.

K.<sup>2</sup> Pileus with reddish  
or reddish-brown  
scales.

L.<sup>1</sup> Pileus bright  
brownish-red,  
scales persis-  
tent on margin;  
annulus persis-  
tent, often  
reddish on the  
margin. P. R.  
35: 155; M.  
62; J. M. 12:  
245.

*L. rubro-*

*tincta* Peck

L.<sup>2</sup> Pileus paler,  
scales soon

disappearing  
from margin;  
annulus usu-  
ally evanes-  
cent. S. 39;  
St. 20; P. R.  
35:155; Mc.  
42.

*L. cristata*

A. & S.

J.<sup>2</sup> Stipe more or less scaly.

K.<sup>1</sup> Pileus pale tan to  
umber. J. M. 12:  
198.

*L. spanista* Morg.

K.<sup>2</sup> Pileus tawny-brown  
or blackish-brown.

L.<sup>1</sup> Plants growing  
on wood; pi-  
leus with  
tawny-brown  
scales. S. 16:  
8; J. M. 12:  
201; P. R. 51:  
283.

*L. acerina*

Peck

L.<sup>2</sup> Plants growing on  
the ground;  
pileus with  
blackish-brown  
scales. S. 37;  
M. 62; J. M.  
12:199; Mc.  
41; P. R. 35:  
156.

*L. felina* Pers.



E.<sup>2</sup> Plants very small; pilei mostly less than 2 cm. broad.

F.<sup>1</sup> Pileus floccose, granulose or minutely scaly.

G.<sup>1</sup> Pileus widely striate or plicate-sulcate.

H.<sup>1</sup> Lamellae rather broad, subdistant; plant whitish to rose color; annulus pale yellow. J. M. 13:6.

*L. rhodopepla* Morg.

H.<sup>2</sup> Lamellae narrow, close; plants not rose color; annulus not yellow.

I.<sup>1</sup> Stipe silky; spores elliptical; pileus rugulose. S. 16:15; Mc. 51; J. M. 13:2; B. T. 27:15.

*L. rugulosa* Peck

I.<sup>2</sup> Stipe not silky; spores subfusiform. S. 38; St. 19; Mc. 43; J. M. 12:108; P. R. 35:157.

*L. metulispota* B. & Br.

G.<sup>2</sup> Pileus even.

H.<sup>1</sup> Stipe clavate, solid; pileus with minute blackish scales. J. M. 12:248. *L. phaeosticta* Morg.

H.<sup>2</sup> Stipe nearly equal, stuffed or hollow.

I.<sup>1</sup> Plants growing on wood; pileus with tawny-brown scales. S. 16:8; J. M. 12:201; P. R. 51:283.

*L. acerina* Peck

I.<sup>2</sup> Plants growing on the ground.

- J.<sup>1</sup> Stipe granular - mealy;  
lamellae broad. S. 48;  
J. M. 12:158; P. R.  
35:162.  
*L. pusillomyces* Peck
- J.<sup>2</sup> Stipe fibrillose or scaly;  
lamellae narrow. J.  
M. 12:199.  
*L. umbrosa* Morg.
- F.<sup>2</sup> Pileus glabrous or silky, not as above.
- G.<sup>1</sup> Pileus rugose-plicate. S. 16:15; J.  
M. 13:2; Mc. 51; B. T. 27:15.  
*L. rugulosa* Peck
- G.<sup>2</sup> Pileus even or nearly so.
- H.<sup>1</sup> Pileus and stipe glabrous. S. 51;  
J. M. 12:156; St. 25.  
*L. mesomorpha* Bull.  
*L. rufipes* Morg.
- H.<sup>2</sup> Pileus silky; stipe fibrillose. S.  
49; J. M. 12:157.  
*L. parvannulata* Lasch

#### NOTES.

*L. porrigens* Viv., listed by Morgan (Jour. Myc. 13:6) is probably to be considered a white form of *L. procera*.

*L. lutea* Bolt., listed by Morgan (Jour. Myc. 13:4), is usually regarded as a yellow form of *L. cepaestipes*.

*L. rufipes* Morg. Jour. Myc. 12:156, is probably not specifically distinct from *L. mesomorpha* Bull.

The occurrence of *L. farinosa* Peck in Ohio is doubtful. Peck separated it from *L. cepaestipes* on account of the even margin and the larger spores (Report 43, p. 35), Morgan (Jour. Myc. 13:1, 3) in reporting the former, says that the chief difference is in the color of the pileus. He gives the same spore measurements for both species.

Several writers state that *L. americana* is *L. badhami* B. & Br. of Europe.

The occurrence of *L. pelidna* B. & M., described from Sullivan's material, is doubtful. It is said to have a greenish-livid, rugose pileus, a solid, bulbous stipe and to grow on fallen logs. S. 67.

Fries (Hym. Eur. 31) regarded *L. acutesquamosa* as a variety of *L. Friesii* Lasch, from which it differs in having the scales of the pileus erect and the lamellae simple. In this country the plants are usually known as *L. acutesquamosa*. Morgan lists the species as *L. aspera* Pers. His plants referred to *L. hemisclera* B. & C. and to *L. asperula* Atk. were probably only forms of *L. acutesquamosa*.

*L. glischra* Morg. Jour. Myc. 12:203 is based on plants referred to *L. oblita* Peck in the Mycologic Flora (p. 64).

The plants referred by Morgan to *L. felinoides* Peck should probably be referred to *L. rubrotincta*.

*L. coerulescens* Peck = *L. virescens* (Speg.) Morg.

*L. rufescens* Morg. Jour. Myc. 12:246, is based on plants which he had previously reported as *L. fuscosquamea* Peck (Mycologic Flora, p. 62).

*L. naucinoides* Peck is said by its author to differ from *L. naucina* Fr. principally in having the spores subelliptic, while those of the latter were said to be globose. The two species are probably not distinct, for the spores of the American plant, at least, are variable in shape.

## ARMILLARIA FR.

A.<sup>1</sup> Lamellae adnate or subdecurrent; pileus with pointed tufts of blackish or brownish hairs, margin striate. S. 80;

M. 64; H. 57; Mc. 55; A. 83. . . . . *A. mellea* Vahl

A.<sup>2</sup> Lamellae sinuate or adnexed; pileus without hairy scales; margin not striate.

B.<sup>1</sup> Stipe not bulbous; whitish pileus variegated with brown spots. S. 80; H. 59; Mc. 57; P. R. 43:41.

*A. nardosmia*\* Ellis

The lamellae of *A. nardosmia* are described as emarginate (sinuate) but Peck says he finds the plants with lamellae adnate or subdecurrent. He regards this name as a synonym for *A. rhagadiosa* Fr., a European species. P. R. 43:42.

B.<sup>2</sup> Stipe bulbous; pileus not brown-spotted.

C.<sup>1</sup> Pileus white or whitish; stipe solid; bulb not marginate. S. 14:70; H. 60; Mc. 54; B. T. 24:140.

*A. appendiculata* Peck

C.<sup>2</sup> Pileus yellow-brown or pale brick-color; stipe stuffed or hollow; bulb marginate. S. 73; St. 28; H. 59.

*A. bulbigera* Alb. & Schw.

### TRICHOLOMA FR.

A.<sup>1</sup> Pileus viscid when moist.

B.<sup>1</sup> Pileus white, shining when dry.

C.<sup>1</sup> Stipe solid, somewhat bulbous, lamellae close. S. 90; H. 600; St. 37; Mc. 63; P. R. 44:42.

*T. resplendens* Fr.

C.<sup>2</sup> Stipe stuffed or hollow, not bulbous; lamellae subdistant. S. 90; M. 65; St. 38...*T. spermaticum* Fr.

B.<sup>2</sup> Pileus not white.

C.<sup>1</sup> Lamellae not becoming reddish or reddish-spotted.

D.<sup>1</sup> Lamellae sulphur-yellow. S. 87; H. 61; Mc. 61; P. R. 44:40.....*T. equestre* L.

D.<sup>2</sup> Lamellae not yellow.

E.<sup>1</sup> Pileus umbonate, with blackish fibrils; lamellae subdistant. S. 88; H. 82; Mc. 63; St. 35; P. R. 44:41.

*T. sejunctum* Sow.

E.<sup>2</sup> Pileus not as above; lamellae close.

F.<sup>1</sup> Pileus pale tan, not rivulose or spotted; lamellae white. S. 9:13; H. 74; Mc. 64; P. R. 44:41.

*T. terriferum* Peck

F.<sup>2</sup> Pileus reddish-brown, becoming rivulose and spotted in drying; lamellae cinereous. S. 9:10; H. 79; P. R. 44:41.

*T. maculatescens* Peck

C.<sup>2</sup> Lamellae becoming reddish or reddish-spotted.

D.<sup>1</sup> Pileus incarnate-red. S. 94; H. 70; Mc. 65;

P. R. 44:42.....*T. russula* Schaeff.

D.<sup>2</sup> Pileus not as above.

E.<sup>1</sup> Stipe bulbous. S. 95.

*T. muciferum* B. & Mont.

E.<sup>2</sup> Stipe not bulbous.

F.<sup>1</sup> Pileus becoming rivulose and spotted;  
stipe solid; lamellae cinereous. S.  
9:10; H. 79; P. R. 44:41.

*T. maculatescens* Peck

F.<sup>2</sup> Pileus not as above; stipe stuffed or hol-  
low; lamellae at first whitish or yel-  
lowish. S. 91; H. 61; P. R. 44:43.

*T. transmutans* Peck

A.<sup>2</sup> Pileus not viscid.

B.<sup>1</sup> Lamellae sulphur-yellow. S. 112; H. 65; Mc. 74; St.

52 .....*T. sulphureum* Bull.

B.<sup>2</sup> Lamellae not yellow.

C.<sup>1</sup> Flesh becoming reddish when broken; plants with  
odor of soap. S. 106; H. 77; Mc. 74; St. 48.

*T. saponaceum* Fr.

C.<sup>2</sup> Flesh and odor not as above.

D.<sup>1</sup> Pileus scaly, fibrillose or silky or becoming so.

E.<sup>1</sup> Pileus some shade of brown or blackish.

F.<sup>1</sup> Lamellae not changing color or becoming  
spotted; pileus blackish-punctate;  
stipe stuffed or hollow. S. 107; H.  
78; St. 48.....*T. cartilagineum* Fr.

F.<sup>2</sup> Lamellae changing color or becoming  
spotted.

G.<sup>1</sup> Lamellae whitish becoming cinereous,  
sub-distant; stipe white or whit-  
ish. S. 104; H. 76; M. 65; Mc.  
71; P. R. 44:50.

*T. terreum* Schaeff.



G.<sup>2</sup> Lamellae becoming reddish or reddish-spotted, close; stipe not white.

H.<sup>1</sup> Stipe stuffed or hollow, subbulbous; pileus umbonate. S. 16:21; H. 78.

*T. squarrulosum* Bres.

H.<sup>2</sup> Stipe solid, not bulbous, pileus not umbonate. S. 101; H. 73; Mc. 73; St. 45; P. R. 44:49.

*T. imbricatum* Fr.

E.<sup>2</sup> Pileus white to pale tan.

F.<sup>1</sup> Lamellae becoming smoky-blue or blackish when bruised. S. 119; Mc. 72; H. 75; P. R. 44:51.

*T. fumescens* Peck

F.<sup>2</sup> Lamellae not so changing.

G.<sup>1</sup> Pileus silky, soon glabrous, 3-5 cm. broad; stipe rather slender, rooting, tomentose at base. S. 112; H. 70; St. 53; P. R. 44:53.

*T. lascivum* Fr.

G.<sup>2</sup> Pileus squamulose or fibrillose, usually more than 5 cm. broad; stipe stout, not tomentose.

H.<sup>1</sup> Pileus usually less than 10 cm. broad, fibrillose or slightly squamulose; without farinaceous taste; spores 6-8 mic. S. 99; H. 68; St. 44; Mc. 68; P. R. 44:47

*T. columbetta* Fr.

H.<sup>2</sup> Pileus usually more than 10 cm. broad, squamulose; taste farinaceous; spores larger. S. 11:9; H. 81; Mc. 68; P. R. 44:16, 47. . . *T. grande* Peck

D.<sup>2</sup> Pileus glabrous or soon becoming so, or pruinat only.

E.<sup>1</sup> Lamellae violaceous or lilac; pileus of same color or with brownish tinge.

F.<sup>1</sup> Stipe solid, bulbous. S. 130; H. 84; A. 87; Mc. 79; M. 65; St. 61; P. R. 44:60 ..... *T. personatum* Fr.

F.<sup>2</sup> Stipe stuffed or hollow, equal or nearly so.

G.<sup>1</sup> Pileus hygrophanous, brownish or brownish-violaceous; flesh whitish. S. 139; H. 62; St. 66; M. B. 131: 14; P. R. 44:61.. *T. sordidum* Fr.

G.<sup>2</sup> Pileus not hygrophanous, violaceous when young; flesh violaceous. S. 131; H. 86; St. 62; Mc. 80; M. B. 116:39 ..... *T. nudum* Bull.

E.<sup>2</sup> Lamellae not violaceous or lilac.

F.<sup>1</sup> Margin of pileus striate or rugose-sulcate.

G.<sup>1</sup> Pileus umbonate, pale lilac, margin striate only; stipe becoming hollow. S. 126.

*T. consobrinum* B. & Mont.

G.<sup>2</sup> Pileus not umbonate, margin rugose or sulcate; stipe solid.

H.<sup>1</sup> Taste mild; stipe white; pileus pruinat. S. 101; M. 65; H. 67; P. R. 44:58.

*T. laterarium* Peck

H.<sup>2</sup> Taste bitter; stipe yellowish; pileus glabrous. S. 129; St. 60; H. 70.. *T. acerbum* Bull.

F.<sup>2</sup> Margin of pileus even.

G.<sup>1</sup> Pileus sooty-black or becoming paler; stipe stuffed or hollow. S. 134; H. 69; M. 66; St. 64.

*T. melaleucum* Pers.

G.<sup>2</sup> Pileus not as above; stipe solid.

H.<sup>1</sup> Lamellae gray to sordid-rufescent; pileus grayish, pruinately, often spotted. S. 132; St. 63; H. 67. . . . . *T. panaeolum* Fr.

H.<sup>2</sup> Lamellae white or whitish, unchanging; pileus glabrous, unspotted.

I.<sup>1</sup> Plants caespitose, stipes rising from common fleshy mass.

M. B. 105:36; H. 83.

*T. unifactum* Peck

I.<sup>2</sup> Plants not as above.

J.<sup>1</sup> Stipe tomentose at the base, rooting. S. 112; H. 70; P. R. 44:53; St. 53.

*T. lascivum* Fr.

J.<sup>2</sup> Stipe glabrous, not rooting.

K.<sup>1</sup> Pileus sub-umbonate usually smoky-brown, 2-5 cm. broad; taste mild. S. 128; H. 74; P. R. 44:58; Mc. 78.

*T. fumidellum* Peck

K.<sup>2</sup> Pileus depressed, usually white, 5-10 cm. broad; taste acid or bitter. S. 127; H. 72; P. R. 44:57; Mc. 79.

*T. album* Schaeff.

# NOTES.

Morgan (Myc. Flora, p. 66) reported *T. cerinum* Pers. for the Miami Valley, but later referred the plants to *Collybia amabilipes* Peck.

## CLITOCYBE FR.

A.<sup>1</sup> Pileus viscid when moist.

B.<sup>1</sup> Pileus umbonate, white tinged with red; lamellae 3 mm. broad. S. 150.....*C. crubescens* Mont.

B.<sup>2</sup> Pileus not umbonate, reddish-brown; lamellae .5 mm. broad (?). S. 196.....*C. angustilamellata* Mont.

A.<sup>2</sup> Pileus moist, hygrophanous or dry; not viscid.

B.<sup>1</sup> Whole plant deep yellow or reddish-yellow; cespitose; pileus 8-20 cm. broad. S. 162; H. 91; M. 69; A. 90; Mc. 96.....*C. illudens* Schw.

B.<sup>2</sup> Plant not colored as above.

C.<sup>1</sup> Lamellae purplish, lilac or flesh-colored.

D.<sup>1</sup> Plants cespitose. S. 164; H. 102; M. 69; Mc. 89 .....*C. monadelphæ* Morg.  
S. 352, 587.....*C. caespitosa* (Berk.)

D.<sup>2</sup> Plants not cespitose.

E.<sup>1</sup> Stipe usually 1-2 cm. thick; lamellae purplish. S. 148; H. 97; M. 67; Mc. 108.

*C. ochropurpurea* Berk.

E.<sup>2</sup> Stipe slender, usually less than 5 mm. thick; lamellae flesh-colored to violaceous. S. 197; H. 105; M. 67; A. 89; Mc. 107.

*C. laccata* Scop.

C.<sup>2</sup> Lamellae white, yellowish or cinereous.

D.<sup>1</sup> Pileus convexo-plane or depressed only.

E.<sup>1</sup> Pileus green or sordid green. S. 153; H. 90; Mc. 90; St. 74.....*C. odora* Bull.

E.<sup>2</sup> Pileus not green.

F.<sup>1</sup> Pileus white or whitish to pale tan.

G.<sup>1</sup> Pileus more than 10 cm. broad. S. 166 .....*C. leiphaemia* Mont.

G.<sup>2</sup> Pileus usually less than 10 cm. broad.

H.<sup>1</sup> Plants growing on wood as trunks of trees. S. 184; M. 68; Mc. 94.

*C. trunkicola* Peck

H.<sup>2</sup> Plants not growing on wood.

I.<sup>1</sup> Pileus mostly 3 cm. or more broad; stipe 4 cm. or more high.

J.<sup>1</sup> Pileus subumbonate, white, or margin tinged with blue. S. 197; M. 67; Mc. 97.

*C. connexa* Peck

J.<sup>2</sup> Pileus not umbonate, whitish when young but soon brownish or grayish-brown. S. 9: 25; A. 91; H. 93.

*C. multiceps* Peck

I.<sup>2</sup> Pilei mostly less than 3 cm. across; stipe 2-3 cm. high.

J.<sup>1</sup> Pileus usually regular, at first silky; stipe subfistulose, waxy; lamellae soon decurrent; plants growing among leaves. S. 157; H. 100; Mc. 92; M. 68; St. 77.

*C. candicans* Pers.

J.<sup>2</sup> Pileus usually revolute, often wavy, glabrous; stipe stuffed; lamellae adnate; plants growing in grassy grounds. S. 157; Mc. 93; H. 104; M. 68; St. 78.

*C. dealbata* Sowerb.

F.<sup>2</sup> Pileus cinereous or yellow to brown or brownish.

G.<sup>1</sup> Lamellae white or whitish.



H.<sup>1</sup> Plants cespitose.

I.<sup>1</sup> Stipe slender, brown or brownish; pileus becoming scaly. S. 164; H. 102; M. 69; Mc. 89; S. 587, 352.

*C. monadelpha* Morg.

*C. caespitosa* (Berk.)

I.<sup>2</sup> Stipe rather thick, whitish; pileus glabrous or slightly silky. S. 9:25; H. 93; A. 91; Mc. 95.

*C. multiceps* Peck

H.<sup>2</sup> Plants not cespitose.

I.<sup>1</sup> Lamellae close, rather narrow. S. 142; Mc. 85; M. 67; St. 70.

*C. nebularis* Batsch

I.<sup>2</sup> Lamellae subdistant, rather broad.

J.<sup>1</sup> Stipe tapering upward. S. 143; H. 94; Mc. 85.

*C. clavipes* Pers.

J.<sup>2</sup> Stipe nearly equal. S. 9:20; H. 88; Mc. 88.

*C. media* Peck

G.<sup>2</sup> Lamellae yellow to ochraceous or cinereous.

H.<sup>1</sup> Lamellae adnate; pileus not hygrophanous.

I.<sup>1</sup> Plants cespitose; lamellae yellow; stipe hollow. S. 142.

*C. columbana* Mont.

I.<sup>2</sup> Plants not cespitose; lamellae pallid ochraceous; stipe solid. S. 170; H. 101; Mc. 101...*C. gilva* Pers.

H.<sup>2</sup> Lamellae decurrent; pileus hygrophanous.

I.<sup>1</sup> Stipe pruinose-pulverulent above; plants with farinaceous odor. S. 185; H. 95; Mc. 109; St. 91.

*C. metachroa* Fr.

I.<sup>2</sup> Stipe glabrous, plants without odor.

J.<sup>1</sup> Margin of pileus even. S. 186; Mc. 109; H. 99... *C. ditopoda* Fr.

J.<sup>2</sup> Margin striate when moist. S. 9:26; H. 99; P. R. 42:18.

*C. subditopoda* Peck

D.<sup>2</sup> Pileus umbilicate to infundibuliform.

E.<sup>1</sup> Pileus white or whitish.

F.<sup>1</sup> Plants growing on wood; stipe often eccentric; pileus lobed and irregular. S. 16:24; B. T. 25:321; Oh. Nat. 10:178.....*C. eccentrica* Peck

F.<sup>2</sup> Plants growing among leaves or grass.

G.<sup>1</sup> Lamellae adnate; pileus less than 3 cm. broad. S. 157; H. 104; St. 78; Mc. 93...*C. dealbata* Sowerb.

G.<sup>2</sup> Lamellae soon decurrent; pileus usually 4 cm. or more broad.

H.<sup>1</sup> Lamellae narrow. S. 180; P. R. 54:174; H. 95.

*C. adirondackensis* Peck

H.<sup>2</sup> Lamellae rather broad.

I.<sup>1</sup> Lamellae close, always white; plants growing on pine leaves. S. 155; H. 99; Mc. 91; St. 77.

*C. pithyophila* Fr.

- I.<sup>2</sup> Lamellae subdistant, becoming yellowish; plants growing on deciduous leaves. S. 155; H. 104; M. 68; Mc. 91; St. 76.

*C. phyllophila* Fr.

- E.<sup>2</sup> Pileus not white when fresh; sometimes fading to whitish when old.

- F.<sup>1</sup> Pileus hygrophanous.

- G.<sup>1</sup> Lamellae rather distant.

- H.<sup>1</sup> Plants usually growing on wood, as old logs; pileus dark watery-brown when moist; lamellae sordid; stipe fibrillose. S. 176; H. 105; M. 70; Mc. 104; St. 88.

*C. cyathiformis* Fr.

- H.<sup>2</sup> Plants growing on the ground; pileus blackish-brown when moist; lamellae brown-cinereous; stipe glabrous. S. 177; H. 101; St. 90.

*C. obbata* Fr.

- G.<sup>2</sup> Lamellae close.

- H.<sup>1</sup> Pileus pruinose with a leaden bloom; margin even; lamellae narrow. S. 178; St. 90; M. 70 ..... *C. pruinosa* Lasch

- H.<sup>2</sup> Pileus glabrous; margin striate when moist; lamellae broad. S. 9:26; H. 99; P. R. 42:18.

*C. subditopoda* Peck

- F.<sup>2</sup> Pileus moist or dry, not truly hygrophanous.

- G.<sup>1</sup> Pileus innate-silky, umbonate when young, umbo often persisting; red-

dish-tan to paler. S. 165; St. 82;  
H. 90; M. 69; Mc. 100.

*C. infundibuliform* Schaeff.

G.<sup>2</sup> Pileus glabrous, not umbonate, yellowish-brown. S. 172; St. 86; H. 101; Mc. 103.

*C. flaccida* Sowerb.

#### NOTES.

*C. ohiensis* Mont. Syll. Crypt. 100, S. 181, is probably *C. nebularis* Batsch, although the description does not quite agree in some respects.

*C. reticeps* Mont. Syll. Crypt. 101, S. 150, is probably *C. laccata* Scop.

Saccardo publishes *C. subditopoda* Peck as "umbonate." Peck described it as umbilicate and says he separated it from *C. ditopoda* Fr. on account of the paler lamellae, striate margin and longer spores. *C. ditopoda*, however, is not umbilicate.

*C. pruinosa* Lasch was first reported by Lea, but does not seem to have been found since. None of Montagne's species have been identified since their publication.

According to Bresadola *C. monadelpha* is the same as *C. tabescens* (Scop.) Bres. of Europe (Lloyd Myc. Notes 1:54).

*Lentinus caespitosus* Berk. and *Pleurotus caespitosus* B. & C. are names of the same plant. The description fits the plant now known as *C. monadelpha* Morg.

#### COLLYBIA FR.

A.<sup>1</sup> Pileus usually more than 1 cm. broad.

B.<sup>1</sup> Stipe glabrous or nearly so, except at base.

C.<sup>1</sup> Lamellae usually more than 4 mm. broad, distant, always white.

D.<sup>1</sup> Pileus glabrous, viscid when moist; stipe usually long-rooting. S. 200; H. 107-8; St. 97; A. 92; Mc. 113; P. R. 49:35, M. 70.

*C. radicata* Relh.

- D.<sup>2</sup> Pileus more or less streaked with dark-colored fibrils, not viscid; stipe not long rooting. S. 203; H. 100; Mc. 114; St. 98; A. 93; P. R. 49: 35; M. 71.....*C. platyphylla* Fr.
- C.<sup>2</sup> Lamellae narrow and close or crowded.
- D.<sup>1</sup> Whole plant purplish- or brownish-lilac. S. 236; H. 115; P. R. 49: 50...*C. myriadophylla* Peck
- D.<sup>2</sup> Plant not as above.
- E.<sup>1</sup> Plants usually caespitose.
- F.<sup>1</sup> Lamellae brownish or tawny. S. 203; M. 73; P. R. 49:49; S. 214.  
*C. lachnophylla* Berk.  
*C. pilularia* Mont.
- F.<sup>2</sup> Lamellae whitish or yellow.
- G.<sup>1</sup> Stipe prominently bulbous at base. S. 240.....*C. physcopodia* Mont.
- G.<sup>2</sup> Stipe equal or only slightly thickened at base.
- H.<sup>1</sup> Lamellae long decurrent. S. 9: 29.....*C. tagetes* B. & Mont.
- H.<sup>2</sup> Lamellae not decurrent.
- I.<sup>1</sup> Stipe reddish, red-brown, or brown, usually long and slender. S. 234; H. 117; St. 110; Mc. 122; P. R. 49:48....*C. acervata* Fr.
- I.<sup>2</sup> Stipe whitish, yellowish, or rufescent. S. 234; St. 111; H. 110; Mc. 120; M. 71; P. R. 49:44.  
*C. dryophila* Bull
- E.<sup>2</sup> Plants commonly solitary or gregarious, occasionally somewhat caespitose.
- F.<sup>1</sup> Pileus white, yellow, light brown or red-brown.

G.<sup>1</sup> Stipe white.

H.<sup>1</sup> Pileus fleshy, white, often with reddish spots; stipe striate. S. 207; St. 100; H. 112; Mc. 116; P. R. 49:37.

*C. maculata* Alb. & Schw.

H.<sup>2</sup> Pileus thin, white or yellow, not spotted; stipe usually not striate. S. 9:30; P. R. 49:44.

*C. strictipes* Peck

G.<sup>2</sup> Stipe some shade of yellow or brown or occasionally pallid.

H.<sup>1</sup> Stipe striate, usually considerably tapering upward, pileus soft to the touch. S. 209; H. 109; St. 101; M. 71; Mc. 117; P. R. 49:37.

*C. butyracea* Bull.

H.<sup>2</sup> Stipe not striate, nearly equal or slightly thickened below.

I.<sup>1</sup> Lamellae yellowish or reddish-yellow, becoming brownish-red in drying. S. 230; M. 72; P. R. 49:50.

*C. coloreae* Peck

I.<sup>2</sup> Lamellae not becoming brownish-red.

J.<sup>1</sup> Pileus usually reddish-brown to tan, sometimes pallid or yellowish. S. 234; H. 110; St. 111; Mc. 120; M. 71...*C. dryophila* Bull.

J.<sup>2</sup> Pileus yellow (see notes).

K.<sup>1</sup> Lamellae pallid; stipe not rooting; pileus at first conic-cam-



panulate. S. 236;

M. 71.

*C. estensis* Morg.

K.<sup>2</sup> Lamellae flesh color;

stipe rooting. S.

232.

*C. xanthopila* Mont.

F.<sup>2</sup> Pileus blackish, blackish-brown or smoky-brown.

G.<sup>1</sup> Pileus 3-6 cm. broad, lamellae adnixed, close. S. 9:27; P. R. 49:36.

*C. fuliginella* Peck

G.<sup>2</sup> Pileus 2.5 cm. or less; lamellae adnate, subdistant.

H.<sup>1</sup> Plants growing on ground; lamellae not venose-connected..

S. 246; H. 113; St. 116.

*C. atrata* Fr.

H.<sup>2</sup> Plants growing on wood; lamellae venose-connected. H.

116; P. R. 49:53.

*C. atratoides* Peck

B.<sup>2</sup> Stipe velvety, fibrillose, downy, furfuraceous or pulverulent.

C.<sup>1</sup> Stipe densely velvety.

D.<sup>1</sup> Pileus fleshy, viscid when moist, margin even. S. 212; H. 118; St. 102; A. 93; Mc. 118; P. R.

49:38.....*C. velutipes* Curt.

D.<sup>2</sup> Pileus thin, not viscid, margin more or less striate. S. 212, 213; Myc. Notes 1:42.

*C. amabilipes* Peck

*C. tenuipes* Schw.

C.<sup>2</sup> Stipe not velvety.

D.<sup>1</sup> Lamellae broad, distant; plants large.

E.<sup>1</sup> Pileus glabrous, viscid when moist; stipe usually long-rooting. S. 200; H. 107-8;

St. 97; Mc. 113; P. R. 49:35; M. 70.

*C. radicata* Relh.

E.<sup>2</sup> Pileus more or less streaked with blackish fibers, not viscid; stipe not rooting. S. 203; H. 109; Mc. 114; St. 98; P. R. 49:35; M. 71.....*C. platyphylla* Fr.

D.<sup>2</sup> Lamellae narrow, close.

E.<sup>1</sup> Pileus glabrous or not hairy or fibrillose.

F.<sup>1</sup> Plants commonly caespitose.

G.<sup>1</sup> Lamellae brownish or tawny. S. 203; M. 73; P. R. 49:49.

*C. lachnophylla* Berk.

G.<sup>2</sup> Lamellae not as above.

H.<sup>1</sup> Lamellae free, soon remote from stipe; pileus reddish to red-brown, paler when dry. S. 222; St. 104; H. 114; Mc. 119; P. R. 49:47.

*C. confluens* Pers.

H.<sup>2</sup> Lamellae adnexed or free but reaching stipe; pileus whitish to pale reddish-brown. S. 221; St. 103; M. 73; P. R. 49:43.

*C. hariolorum* DC.

F.<sup>2</sup> Plants solitary or gregarious, occasionally subcaespitose.

G.<sup>1</sup> Pileus sooty-brown; stipe more or less fibrillose. S. 9:27; P. R. 49:36.....*C. fuliginella* Peck

G.<sup>2</sup> Pileus white to red-brown; stipe white-downy or tomentose. S. 221; St. 103; P. R. 49:43.

*C. hariolorum* DC.

E.<sup>2</sup> Pileus hairy or tomentose.

F.<sup>1</sup> Lamellae adnexed or becoming free, subdistant; plants not caespitose. S. 216; St. 103; M. 72; P. R. 49:42.

*C. stipitaria* Fr.

- 17.<sup>2</sup> Lamellae free, close; plants mostly cespitose. S. 216; H. 112; M. 72; P. R. 49:42.....*C. zonata* Peck
- A.<sup>2</sup> Pileus 1 cm. or less broad.
- B.<sup>1</sup> Pileus and stipe fibrillose or tomentose. S. 216; St. 103; M. 72; P. R. 49:42.....*C. stipitaria* Fr.
- B.<sup>2</sup> Pileus and stipe not as above.
- C.<sup>1</sup> Stipe arising from a sclerotoid tuber. S. 224; St. 106; P. R. 49:41; M. 73; Oh. Nat. 11:247.  
*C. tuberosa* Bull.
- C.<sup>2</sup> Stipe with long, fibrillose, rooting base; no tuber present. S. 224; St. 105; P. R. 49:41.  
*C. cirrata* Schum.

# NOTES.

*C. pilularia*, *C. xanthopila*, *C. physcopodia* and *C. tagetes* were described from specimens sent to Montagne by Sullivant and have not been recognized since.

Morgan's description of *C. estensis* is rather meager. It is probably a form of *C. dryophila* or perhaps is identical with *C. strictipes*.

The plants referred by Hard (p. 108) to *C. ingrata* Schum. should probably be considered a form of *C. confluens*. According to Berkeley (Outlines of British Fungology, p. 117), the principal difference between the two species is that in the former the lamellae more nearly approach the stipe.

Some writers believe that *C. tenuipes* and *C. amabilipes* are identical. Schweinitz described the former as having a stipe 15-30 cm. long, pileus depressed and subumbonate, plants growing among decaying leaves. The Ohio plants grow on decayed wood, the pileus is convex-expanded, and the stipe is variable in length, but seldom more than 8-10 cm. long. Peck's description of *C. amabilipes* fits our plants more closely, and unless we assume that Schweinitz had very exceptional specimens, they should be known by Peck's name. Lloyd says the pileus is slightly viscid, but we have never found it so. (Myc. Notes 1: 109.)

MYCENA FR.

- A.<sup>1</sup> Whole plant, especially stipe, with dark red juice. S. 291;  
St. 141; H. 122; A. 98; Mc. 130; M. 75.

*M. haematopoda* Pers.

- A.<sup>2</sup> Plants without red juice.

- B.<sup>1</sup> Whole plant bright orange red, or fading to yellow;  
pileus viscid. S. 9: 38; H. 127; M. 74.

*M. leaiana* Berk.

- B.<sup>2</sup> Plant not orange-red or bright yellow.

- C.<sup>1</sup> Stipe inserted. S. 302; St. 149; H. 125.

*M. corticola* Schum.

- C.<sup>2</sup> Stipe not inserted.

- D.<sup>1</sup> Lamellae violaceous, edge blackish denticulate;  
pileus livid-purple to paler; stipe concolorous.  
S. 251; St. 121; Berk. Out. 121.

*M. pelianthina* Fr.

- D.<sup>2</sup> Edge of lamellae not darker than the rest of  
their surface, not denticulate.

- E.<sup>1</sup> Base of stipe with blue fibrils; pileus often  
blue or bluish. S. 16: 29; P. R. 51: 284;  
Oh. Nat. 11: 350...*M. cyaneobasis* Peck

- E.<sup>2</sup> Pileus and stipe not as above.

- F.<sup>1</sup> Neither stipe nor pileus viscid.

- G.<sup>1</sup> Pilei mostly 2.5 cm. or more broad.

- H.<sup>1</sup> Plants pinkish-purple or lilac, or  
becoming paler; with odor of  
radishes. S. 256; St. 125; H.  
128; A. 95; M. 74.

*M. pura* Pers.

- H.<sup>2</sup> Pileus usually some shade of  
gray, yellow or brown; some-  
times whitish.

- I.<sup>1</sup> Stipe firm, rigid, pileus not  
hygrophanous.

- J.<sup>1</sup> Lamellae adnate-uncinate,  
flesh-colored or whit-  
ish; pileus striate, usu-

ally some shade of gray or brown; stipe not striate. S. 268; H. 120; St. 130; A. 94; Mc. 127; M. 74.

*M. galericulata* Scop.

J.<sup>2</sup> Lamellae adnexed, white or whitish; pileus striatulate only, paler than the above; stipe striatulate. S. 267; St. 128; H. 120; Mc. 126.

*M. prolifera* Fr.

I.<sup>2</sup> Stipe more or less fragile; pileus hygrophaneous.

J.<sup>1</sup> Pileus cinereous or some shade of brown, broadly umbonate; lamellae adnate. S. 277; St. 134; H. 123.

*M. alcalina* Fr.

J.<sup>2</sup> Pileus gray when moist to tin-colored when dry, not umbonate; lamellae adnate-uncinate. S. 280; St. 137; H. 124.

*M. stannea* Fr.

G.<sup>2</sup> Pilei mostly less than 2.5 cm. broad.

H.<sup>1</sup> Stipe filiform, with rooting hairy base; pileus grayish to brownish. S. 283; St. 138; H. 124; M. 75. . . . . *M. filipes* Bull.

H.<sup>2</sup> Stipe not filiform.

I.<sup>1</sup> Lamellae broad.

J.<sup>1</sup> Lamellae adnate-uncinate, flesh-colored or whitish; pileus striate;

stipe not striate. S.  
268; H. 120; A. 94;  
St. 130; Mc. 127; M.  
74.

*M. galericulata* Scop.

J.<sup>2</sup> Lamellae adnexed, white  
or whitish; pileus stri-  
atulate only; stipe stri-  
atulate. S. 267; St.  
128; H. 120; Mc. 126.

*M. prolifera* Fr.

I.<sup>2</sup> Lamellae linear or rather  
narrow.

J.<sup>1</sup> Lamellae adnate, pileus  
livid, or bluish-gray,  
not umbonate. S. 280;  
St. 137; H. 125.

*M. vitrea* Fr.

J.<sup>2</sup> Lamellae not adnate;  
pileus umbonate or  
subumbonate.

K.<sup>1</sup> Pileus white to gray;  
stipe fusiform,  
fibrillose and root-  
ing. S. 273.

*M. cymbalifera* Mont.

K.<sup>2</sup> Pileus purplish to  
yellow, stipe neith-  
er fusiform, fibril-  
lose nor rooting.  
S. 258.

*M. conferruminata* Berk. & Mont.

F.<sup>2</sup> Pileus or stipe or both viscid.

G.<sup>1</sup> Stipe yellowish or paler; lamellae ad-  
nate-uncinate. S. 294; St. 144;  
H. 129; A. 96.

*M. epipterygia* Scop.



G.<sup>2</sup> Stipe cinereous; lamellae somewhat decurrent. S. 295; St. 145; H. 129; A. 97. . . . . *M. vulgaris* Pers.

NOTES.

*M. lilacina* Mont., described from Sullivant's material (S. 257), is a doubtful *Mycena*. The pileus is said to be lilac-colored and umbilicate; the lamellae remote (when dry) and rosy-ochraceous. The plants may possibly have been *M. pura*, the abnormal character appearing in drying.

Neither the above nor *M. cymbalifera* nor *M. conferruminata* have been recognized since described.

*M. vitrea* and *M. vulgaris* have not been definitely reported from Ohio but probably occur here and so are included.

OMPHALIA FR.

A.<sup>1</sup> Lamellae yellow or yellowish.

B.<sup>1</sup> Pilei mostly 2.5 cm. or more broad; stipe yellow.

C.<sup>1</sup> Pileus flocculose or squamulose; lamellae and stipe bright yellow. S. 312; P. R. 45:35; St. 153; H. 135. . . . . *O. chrysophylla* Fr.

C.<sup>2</sup> Pileus glabrous; lamellae and stipe paler, at first whitish. S. 327; H. 135; M. 76.

*O. alboflava* Morg.

B.<sup>2</sup> Pilei less than 2.5 cm. broad; stipe not yellow.

C.<sup>1</sup> Stipe tawny-strigose at base, brown; plants on decayed wood. S. 327; H. 130; M. 77; A. 101; Mc. 134; St. 160; P. R. 45:38.

*O. campanella* Batsch.

C.<sup>2</sup> Stipe not strigose at base, pallid or rufescent; plants on ground. S. 313; H. 133; St. 154; P. R. 45:36.

*O. pyxidata* Bull.

A.<sup>2</sup> Lamellae white, whitish, gray or cinereous.

B.<sup>1</sup> Pileus depressed only, not umbilicate or infundibuliform

C.<sup>1</sup> Lamellae broad, subtriangular; plants on ground. S. 321; St. 158; Mc. 133; H. 132; M. 76; P. R. 45:38 . . . . . *O. umbellifera* Linn

- C.<sup>2</sup> Lamellae narrow; plants on wood, white. S. 337;  
St. 164; M. 77.....*O. integrella* Pers.
- B.<sup>2</sup> Pileus umbilicate or infundibuliform.
- C.<sup>1</sup> Pileus sulcate, yellowish or fading. S. 315; St. 156;  
H. 132.....*O. caespitosa* Bolt.
- C.<sup>2</sup> Pileus even or striatulate only.
- D.<sup>1</sup> Pileus sooty-gray or reddish-brown, usually silky  
or flocculose or becoming so.
- E.<sup>1</sup> Pilei usually less than 1 cm. broad; plants on  
ground. S. 316; St. 156; M. 76.  
*O. rustica* Fr.
- E.<sup>2</sup> Pilei usually more than 1 cm. broad; plants  
on wood. S. 314; H. 130; M. 76; A. 101;  
P. R. 45:37.....*O. epichysium* Fr.
- D.<sup>2</sup> Pileus not as above.
- E.<sup>1</sup> Pileus yellow to orange or paler, 4-10 mm.  
broad; stipe 2-5 cm. long. S. 331; St. 163;  
P. R. 45:40; H. 134; M. 77.  
*O. fibula* Bull.
- E.<sup>2</sup> Pileus reddish-brown or grayish-red, 8-25  
mm. broad.
- F.<sup>1</sup> Lamellae pallid; stipe reddish-brown, 6-  
12 mm. long. S. 321; St. 158; M.  
76.....*O. muralis* Sow.
- F.<sup>2</sup> Lamellae flesh color, grayish-red, or pale  
yellow; stipe pallid to rufescent, usu-  
ally longer. S. 313; St. 154; H. 133;  
P. R. 45:36.....*O. pyridata* Bull.

#### NOTES.

*O. alboflava* is closely related to *O. chrysophylla* and is prob-  
ably a variety of the latter. The plants figured by Hard (p. 135,  
f. 100) as *O. alboflava* agree more closely with the description of  
*O. chrysophylla*.

*O. chrysea* Peck, reported by Morgan (p. 75), is now re-  
garded by its author as a variety of *O. chrysophylla*.

*O. rhyssospora* Mont. and *O. strombodes* B. & Mont., de-

scribed from Sullivan's material, do not seem to agree with the characters of the genus. The former is described as having the lamellae adnexed and decurrent by a tooth; the latter, as having the edge of the lamellae obtuse. In *Omphalia* the lamellae are truly decurrent and the edge acute. (See S. 318 and S. 333.)

# PLEUROTUS FR.

A.<sup>1</sup> Partial veil present, usually appendiculate about margin of pileus, pileus usually 5-15 cm. broad, lamellae broad. S. 339-340; M. 79; Mc. 137; St. 166; A. 105-107.

*P. dryinus* Pers.

*P. corticatus* Fr.

A.<sup>2</sup> Veil wanting.

B.<sup>1</sup> Stipe present; sometimes short or even suppressed but pileus never resupinate.

C.<sup>1</sup> Lamellae long decurrent.

D.<sup>1</sup> Pileus white, silky-villous. S. 360; St. 173.

*P. acerinus* Fr.

D.<sup>2</sup> Pileus some shade of yellow or brown.

E.<sup>1</sup> Pileus thin; lamellae close, linear; stipe lateral. S. 361; P. R. 39:64; H. 157; A. 107; Mc. 144; St. 174....*P. petaloides* Fr.

E.<sup>2</sup> Pileus thick; lamellae broad, subdistant.

F.<sup>1</sup> Spores lilac in mass. S. 348; P. R. 39:61; H. 159; M. 79; A. 104; Mc. 141.....*P. sapidus* Kalchb.

F.<sup>2</sup> Spores white.

G.<sup>1</sup> Lamellae entire, anastomosing at base; pileus glabrous. S. 355; P. R. 39:62; H. 153; A. 104; Mc. 142.....*P. ostreatus* Jacq.

G.<sup>2</sup> Lamellae eroded, distinct at base; pileus substrigose. S. 359; H. 156; M. 79; Mc. 143; St. 173; P. R. 39:62.....*P. salignus* Schrad.

C.<sup>2</sup> Lamellae not long decurrent; (sometimes uncinatate or subdecurrent).

D.<sup>1</sup> Pileus viscid when moist; stipe with minute blackish tomentum. S. 363; M. 80; Mc. 145; A. 109; St. 175; P. R. 39:62

*P. scrotinus* Schrad.

D.<sup>2</sup> Pileus and stipe not as above.

E.<sup>1</sup> Lamellae broad, sinuate; pileus glabrous; stipe thick, solid. S. 341; P. R. 39:60; H. 157; M. 78; Mc. 138; A. 102; St. 167.

*P. ulmarius* Bull.

E.<sup>2</sup> Lamellae rather narrow, adnate to subdecurrent.

F.<sup>1</sup> Pileus grayish to brownish, glabrous; stipe solid. S. 343; M. 78; St. 169.

*P. craspedius* Fr.

F.<sup>2</sup> Pileus white, pruinatate or floccose; stipe stuffed or hollow.

G.<sup>1</sup> Lamellae adnate to emarginate; stipe subvillous; pileus somewhat irregular. S. 344; St. 170; M. 78; P. R. 39:60; Mc. 140.

*P. lignatilis* Fr.

G.<sup>2</sup> Lamellae adnate to subdecurrent; stipe glabrous, pileus orbicular. S. 344; H. 163; Mc. 140; St. 171.

*P. circinatus* Fr.

B.<sup>2</sup> Stipe wanting; pileus definitely sessile or resupinate.

C.<sup>1</sup> Pileus less than 8 mm. broad, cup-shaped when young, gray, bluish-gray or nearly black. S. 379; H. 161; A. 109; St. 180. . . . *P. applicatus* Batsch

C.<sup>2</sup> Pileus usually 2 cm. or more broad.

D.<sup>1</sup> Pileus glabrous or nearly so.

E.<sup>1</sup> Lamellae very narrow; pileus somewhat spatulate, not viscid when moist. S. 361; P. R. 39:64; H. 157; Mc. 144; St. 174, A. 107. . . . . *P. petaloides* Fr.

E.<sup>2</sup> Lamellae rather broad; pileus at first resupinate, becoming somewhat reniform, viscous when moist. S. 378; St. 180; M. 80.

*P. algidus* Fr.

D.<sup>2</sup> Pileus silky, villous or with somewhat pointed scales when fresh; not glabrous.

E.<sup>1</sup> Pileus white or whitish, silky. S. 374; M. 80. .... *P. pinsitus* Fr.

E.<sup>2</sup> Pileus darker in color when fresh.

F.<sup>1</sup> Pileus mouse-gray, usually with tufted scales. S. 376; M. 80; Mc. 146; St. 179. .... *P. mastrucatus* Fr.

F.<sup>2</sup> Pileus blackish-blue or brownish-gray, villous, not scaly. S. 377; P. R. 39: 65; St. 179. .... *P. atrocoeruleus* Fr.

#### NOTES.

*P. nidulans* Pers. is now usually placed in the genus *Claudopus* on account of its salmon-colored or pink spores. *P. sapidus*, which has pale lilac spores, is usually regarded as a *Pleurotus* because of its obvious relations with some species of that genus.

Plants formerly referred to *P. serotinus* Peck and *P. abscondens* Peck, and so listed by Hard, are now regarded by Peck as varieties of *P. serotinus* and *P. lignatilis* respectively.

Kellerman and Werner (p. 305) include *P. acerinus* in the list of Ohio plants. This seems to be the only reference to this species in Ohio literature.

Plants referred by Morgan to *P. niger* Schw. were probably *P. applicatus*, which is a rather common species in southwestern Ohio.

The plants referred to *P. circinatus* by Hard were probably *P. lignatilis*. He says it may be known by the white gills. The lamellae of *P. lignatilis* are white.

The occurrence of *P. pinsitus* in Ohio is rather doubtful.

*P. caespitosus* B. & C. was first published as a *Lentinus*, then as a *Pleurotus*. It is probably the plant now known as *Clitocybe monadelphæ* Morg.

*P. corticatus* is very close to *P. dryinus* Pers. It should probably be regarded as a variety of the latter as Atkinson does.

## HYGROPHORUS FR.

A.<sup>1</sup> Plants becoming black when bruised or dried; pileus conic; red, orange or yellow or with these colors blended. S. 418; St. 2:89; Mc. 160; H. 209; M. 181; M. B. 116:62.

*H. conicus* (Scop.) Fr.

A.<sup>2</sup> Plants not becoming black.

B.<sup>1</sup> Stipe solid.

C.<sup>1</sup> Pileus and stipe glutinous.

D.<sup>1</sup> Stipe punctate or scabrous at top with small scales.

E.<sup>1</sup> Pileus pale brownish or reddish brown to whitish, center usually darker. S. 388; M. B. 116:48; H. 213; Mc. 716; M. 180.

*H. lauræ* Morg.

E.<sup>2</sup> Whole plant white; (the stipe usually stuffed or becoming hollow). S. 388; M. B. 116:47; St. 2:71; H. 206; Mc. 149; A. 111; M. 180.

*H. eburneus* (Bull.) Fr.

D.<sup>2</sup> Stipe not punctate or scabrous.

E.<sup>1</sup> Pileus white, yellow or reddish-yellow in the center. S. 398; H. 210; Mc. 157; M. B. 116: 50 .....*H. flavodiscus* Frost

E.<sup>2</sup> Pileus grayish-brown or smoky-brown, often darker in the center. S. 398; H. 212; Mc. 158; A. 113; M. B. 116:52.

*H. fuliginosus* Frost

C.<sup>2</sup> Pileus and stipe not glutinous; pileus may be viscid or moist only.

D.<sup>1</sup> Lamellae distant or subdistant; pileus convexo-plane or somewhat depressed.



E.<sup>1</sup> Pileus white or whitish.

F.<sup>1</sup> Pileus somewhat viscid; lamellae rather close or subdistant, mostly adnate. S. 16:30; H. 220; B. T. 25:322.

*H. sordidus* Peck

F.<sup>2</sup> Pileus not viscid; lamellae distant, decurrent. S. 402; St. 2:79; Mc. 153; H. 219; M. B. 116:55.

*H. virgineus* (Bull.) Fr.

E.<sup>2</sup> Pileus not white.

F.<sup>1</sup> Pileus variable in color, not viscid, usually more than 2.5 cm. broad; plants growing on ground. S. 401; H. 205, 206; St. 2:79; Mc. 152; A. 113; M. B. 116:56.

*H. pratensis* (Pers.) Fr.

F.<sup>2</sup> Pileus yellow becoming purplish, viscid, 2.5 cm. or less in breadth; plants growing on wood. S. 422.

*H. ohioensis* Mont.

D.<sup>2</sup> Lamellae crowded, narrow, pileus soon infundibuliform. S. 403.

*H. stenophyllus* Mont.

B.<sup>2</sup> Stipe stuffed or soon hollow.

C.<sup>1</sup> Stipe scabrous or punctate at apex with small scales; whole plant white, viscid. S. 388; M. B. 116:47; St. 2:71; H. 206; Mc. 149; A. 111; M. 180. .... *H. eburneus* (Bull.) Fr.

C.<sup>2</sup> Stipe glabrous.

D.<sup>1</sup> Plants covered with greenish slime, at least when rather young. S. 420; A. 114; M. B. 116: 64; St. 2: 90.

*H. psittacinus* (Schaeff.) Fr.

D.<sup>2</sup> Plants without greenish slime.

E.<sup>1</sup> Plants bright red, orange or yellow; pileus thin and fragile.

F.<sup>1</sup> Pileus viscid when moist.

G.<sup>1</sup> Plants yellow; without red or with only slight tinge of red at center.

H.<sup>1</sup> Stipe viscid; lamellae emarginate-adnexed. S. 419; St. 2:90; Mc. 160; H. 208; M. B. 116:66; M. 181.

*H. chlorophanus* Fr.

H.<sup>2</sup> Stipe not viscid; lamellae adnate or subdecurrent. S. 412; St. 2:86; M. B. 116:61; H. 218; Mc. 155; M. 181.

*H. ceraceus* (Wulf.) Fr.

G.<sup>2</sup> Pileus red.

H.<sup>1</sup> Lamellae adnexed or emarginate; stipe whitish at the base, rather stout. S. 416; St. 2:88; M. B. 116:63; Mc. 159; M. 181.....*H. puniceus* Fr.

H.<sup>2</sup> Lamellae adnate or subdecurrent; stipe yellow at the base, rather slender. S. 412; St. 2:86; Mc. 156; H. 209; M. 181; M. B. 116:63.

*H. coccineus* Schaeff.

F.<sup>2</sup> Pileus not viscid.

G.<sup>1</sup> Lamellae quite decurrent. S. 414; M. B. 116:59; H. 208; Mc. 156.

*H. cantharellus* Schw.

G.<sup>2</sup> Lamellae normally adnate or sinuate; sometimes becoming somewhat decurrent by the expansion of the pileus. S. 413; St. 2:87; M. B. 116:61; H. 215; Mc. 159; A. 113.....*H. miniatus* Fr

E.<sup>2</sup> Plants not bright red, etc., as above; more or less firm and fleshy; pileus not viscid

- F.<sup>1</sup> Whole plant white or whitish; stipe usually less than 5 cm. long. S. 402; St. 2:79; Mc. 153; M. B. 116:55; H. 219.....*H. virgineus* (Bull.) Fr.
- F.<sup>2</sup> Pileus tawny, buff, cinereous; occasionally varying to whitish or with tinge of red; stipe usually more than 5 cm. long. S. 401; H. 205,206; St. 2:79; Mc. 152; A. 113; M. B. 116:56.  
*H. pratensis* (Pers.) Fr.

# LACTARIA PERS.

- A.<sup>1</sup> Latex colored from the first.
- B.<sup>1</sup> Latex and plant indigo-blue. S. 438; N. A. F. 187; H. 167; Mc. 171; A. 125; P. R. 38:115.  
*L. indigo* (Schw.) Fr.
- B.<sup>2</sup> Latex and plant saffron-red or orange. S. 438; N. A. F. 186; H. 170; Mc. 170; A. 123; M. 184; P. R. 38:116.  
*L. deliciosus* (L.) Fr.
- A.<sup>1</sup> Latex white or whitish at first.
- B.<sup>1</sup> Latex very acrid.
- C.<sup>1</sup> Pileus dry or only moist; not viscid.
- D.<sup>1</sup> Latex becoming golden-yellow; pileus zonate. S. 433; H. 181; P. R. 38:117; N. A. F. 188; A. 122; St. 2:101.....*L. chrysorhœa* Fr.
- D.<sup>2</sup> Latex unchanging; pileus azonate except in *L. rusticana*.
- E.<sup>1</sup> Pileus white, whitish or yellowish.
- F.<sup>1</sup> Pileus tomentose; lamellae broad, distant. S. 437; N. A. F. 177; H. 181; Mc. 169; M. 183; St. 2:102; P. R. 38:124.  
*L. vellerea* Fr.
- F.<sup>2</sup> Pileus glabrous; lamellae close, narrow.
- G.<sup>1</sup> Flesh thick; lamellae usually decurrent, not straw colored, 2 mm. broad; stipe solid. S. 436; N. A.

F. 176; H. 165; Mc. 168; A. 120;  
M. 183; St. 2: 102; P. R. 38: 125.

*L. piperata* (Scop.) Fr.

G.<sup>2</sup> Flesh thin; lamellae adnate, becoming  
straw-colored, 1 mm. broad; stipe  
stuffed; latex often drying sulfur-  
yellow. S. 436; H. 166; N. A. F.  
176; Mc. 167; M. 183; St. 2: 101.

*L. pergamena* (Sw.) Fr.

E.<sup>2</sup> Pileus dark colored.

F.<sup>1</sup> Pileus olivaceous; azonate, scabrous-  
hairy; lamellae close, narrow, staining  
green. S. 9: 56; H. 175; N. A. F.  
178; P. R. 42: 23. *L. atroviridis* Peck

F.<sup>2</sup> Pileus grayish to brown, or with lurid  
tints, somewhat zoned, glabrous; lam-  
ellae subdistant, rather broad, not  
staining green. S. 432; St. 2: 100;  
N. A. F. 178; P. R. 38: 128.

*L. pyrogala* Fr.

*L. rusticana* (Scop.) Burl.

C.<sup>2</sup> Pileus viscid.

D.<sup>1</sup> Plants becoming blackish in age or with injury;  
stipe viscid when moist. S. 426; St. 2: 94;  
N. A. F. 183; P. R. 38: 120.

*L. turpis* (Weinm.) Fr.

D.<sup>2</sup> Plants not becoming blackish.

E.<sup>1</sup> Margin of pileus woolly or tomentose, at least  
in young plants.

F.<sup>1</sup> Stipe scrobiculate-pitted; latex becoming  
yellow; margin often naked at matur-  
ity. S. 424; H. 169-170; M. 182; St.  
2: 93; N. A. F. 179; P. R. 38: 118.

*L. scrobiculata* (Scop.) Fr.

F.<sup>2</sup> Stipe not pitted; latex unchanging.

G.<sup>1</sup> Center of pileus glabrous, usually  
zonate. S. 424; N. A. F. 178; H.

164-5; Mc. 163; St. 2:93; P. R. 38:120.

*L. torminosa* (Schaeff.) Pers.

G.<sup>2</sup> Whole pileus tomentose, azonate.

S. 425; M. 182; St. 2:94;

N. A. F. 179; P. R. 38:119.

*L. cilicioides* Fr.

E.<sup>2</sup> Pileus glabrous; margin naked or only pruinose.

F.<sup>1</sup> Latex becoming yellow; pileus zonate, white to yellowish. S. 433; H. 181;

A. 122; N. A. F. 188; St. 2:101; P. R.

38:117..... *L. chrysorheca* Fr.

F.<sup>2</sup> Latex unchanging (or drying greenish in *L. trivialis*).

G.<sup>1</sup> Pileus some shade of yellow or orange.

H.<sup>1</sup> Pileus zonate; lamellae about 2 mm. broad.

I.<sup>1</sup> Spores white; stipe usually longer than 5 cm., solid or spongy within, unspotted; pileus usually depressed only. S. 428; M. 183; St. 2:96.

*L. zonaria* (Bull.) Fr.

I.<sup>2</sup> Spores yellow; stipe usually less than 5 cm. long, stuffed or hollow, sometimes spotted; pileus usually infundibuliform. S. 427; N. A. F. 180; H. 171; P. R. 38:122; Mc. 165; St. 2:96.

*L. insulsa* Fr.

H.<sup>2</sup> Pileus azonate; lamellae 4-10 mm. broad. S. 428; M. 184; N. A. F. 180; P. R. 38: 121.

*L. affinis* Peck

G.<sup>2</sup> Pileus lurid to ash-gray or snuff-brown.

H.<sup>1</sup> Pileus usually more than 8 cm. broad; viscidility slimy, persistent; lamellae rather broad; stipe cream-yellow. S. 430; M. 183; H. 170; P. R. 38: 120; N. A. F. 181; St. 2: 98.

*L. trivialis* Fr.

H.<sup>2</sup> Pileus usually less than 8 cm. broad; viscidility thin, disappearing; lamellae rather narrow; stipe cinereous. S. 428; M. 184; P. R. 38: 122; N. A. F. 190; H. 173.

*L. cinerea* Peck

B.<sup>2</sup> Latex mild or only slightly acrid.

C.<sup>1</sup> Pileus ash-gray, somewhat viscid. . . . *L. cinerea* Peck

C.<sup>2</sup> Pileus some shade of yellow or brown, dry.

D.<sup>1</sup> Lamellae distant; pileus yellow to fulvous. S. 448; N. A. F. 196; P. R. 38: 129; H. 174; M. 184; Mc. 180. . . . *L. hygrophoroides* B. & C.

D.<sup>2</sup> Lamellae close.

E.<sup>1</sup> Pileus zonate; fulvous to brownish. S. 449; N. A. F. 176; St. 2: 110. . . *L. ichorata* Fr.

E.<sup>2</sup> Pileus azonate.

F.<sup>1</sup> Pileus glabrous.

G.<sup>1</sup> Flesh thick, becoming brownish on exposure to air; stipe stout. S. 447; H. 178; P. R. 38: 130; N. A. F. 195; Mc. 180; A. 115; M. 184; St. 2: 109.

*L. volema* Fr.

*L. lactiflua* (L.) Burl.



G.<sup>2</sup> Flesh thin, not becoming brownish;  
stipe slender.

H.<sup>1</sup> Margin striatulate when moist;  
(pileus slightly viscid but this  
character may not be appa-  
rent); plants growing among  
Sphagnum, other mosses and  
old leaves. S. 451; N. A. F.  
189; P. R. 38: 133.

*L. paludinella* Peck

II.<sup>2</sup> Margin even; pileus not viscid.

I.<sup>1</sup> Pileus rimose-areolate, red-  
dish-brown, with faint  
aromatic odor; lamellae  
4-6 mm. broad; latex  
somewhat watery. N. A.  
F. 198; Oh. Nat. 10;  
177-8; M. B. 105: 37.

*L. rimosella* Peck

I.<sup>2</sup> Pileus smooth, fulvous to  
reddish-fulvous, odorless;  
lamellae 3 mm. broad;  
latex white, not watery.  
S. 450; H. 176; N. A. F.  
198; Mc. 182; M. 184;  
P. R. 38: 132.

*L. subdulcis* (Bull.) Fr.

F.<sup>2</sup> Pileus velvety or pruinose-velvety.

G.<sup>1</sup> Pileus sooty or smoky-brown, usually  
umbonate; latex becoming salmon-  
pink. S. 445; P. R. 38: 129; H.  
173; Mc. 177; N. A. F. 194; A.  
117. . . . . *L. ligniota* Fr.

G.<sup>2</sup> Pileus yellow to reddish-brown, plane  
or depressed; latex not becoming  
pink.

H.<sup>1</sup> Flesh and lamellae staining brown where injured.

I.<sup>1</sup> Pileus reddish-brown; usually much corrugated. S. 449; N. A. F. 197; H. 177-178; Mc. 178; A. 116; P. R. 38: 130.

*L. corrugis* Peck

I.<sup>2</sup> Pileus yellowish-buff, even or slightly rugose. S. 14: 94; N. A. F. 197; Mc. 178; B. T. 23: 412.

*L. luteola* Peck

H.<sup>2</sup> Flesh and lamellae not staining brown; pileus golden-fulvous. N. A. F. 197; M. B. 75; 18.

*L. subvelutina* Peck

#### NOTES.

The nomenclature in the above key is that employed by Miss Burlingham in her monograph of the genus in the North American Flora. The genus is commonly known as *Lactarius*, which Miss Burlingham regards as merely a variation in spelling. *L. lactiflua* is commonly known as *L. volema*, and *L. rusticana* is usually published as *L. pyrogala*. In these cases both names are given.

*L. distans* Peck, reported by Morgan and Hard, is now regarded by Peck as a synonym for *L. hygrophoroides*. *L. sordida* Peck is a synonym for *L. turpis*.

*L. vieta* Fr., *L. calceola* Berk. and *L. zonaria* (Bull.) Fr. were reported by Lea and included in Morgan's list. The first has not been otherwise reported from North America. *L. calceola* was probably an abnormal form of *L. hygrophoroides*. Of the three only *L. zonaria* is included in the key and its occurrence in Ohio is doubtful.

*L. torminosa* has not been reported for Ohio but its range is such as to indicate that it will likely be found here.

RUSSULA PERS.

A.<sup>1</sup> Lamellae conspicuously unequal, short and long alternating; pileus firm, margin even, flesh thick.

B.<sup>1</sup> Pileus changing color in age or in drying.

C.<sup>1</sup> Pileus becoming smoky-brown or blackish.

D.<sup>1</sup> Lamellae distant or subdistant, broad, thick; pileus somewhat viscid; flesh turning reddish then blackish. S. 453; M. B. 116: 68; K. 65; Mc. 187; H. 184; St. 2: 114.

*R. nigricans* (Bull.) Fr.

D.<sup>2</sup> Lamellae close, rather narrow, thin.

E.<sup>1</sup> Pileus viscid when moist. M. B. 116: 69; Oh. Nat. 10: 177-8. . . *R. subsordida* Peck

E.<sup>2</sup> Pileus not viscid.

F.<sup>1</sup> Flesh of pileus not changing color when wounded. S. 454; M. B. 116: 70; K. 66; Mc. 188; H. 183; St. 2: 114.

*R. adusta* (Pers.) Fr.

F.<sup>2</sup> Flesh changing color when wounded.

G.<sup>1</sup> Flesh becoming reddish then blackish when wounded. S. 454; M. B. 116: 70; K. 67; H. 197.

*R. densifolia* Secr.

G.<sup>2</sup> Flesh becoming blackish without assuming reddish tint. S. 459; M. B. 116: 69; K. 66; Mc. 190; M. 186. . . . . *R. sordida* Peck

C.<sup>2</sup> Pileus becoming tawny or ochraceous. S. 9: 59; M. B. 116: 71. . . . . *R. compacta* Frost

B.<sup>2</sup> Pileus not changing color in age or in drying.

C.<sup>1</sup> Pileus white, glabrous; lamellae white. S. 455; M. B. 116: 72; K. 64; H. 182; Mc. 190; St. 2: 115.

*R. delica* Fr.

C.<sup>2</sup> Pileus sordid to brown, flocculose; lamellae becoming somewhat flesh-color. S. 468; M. 187.

*R. morgani* Sacc.

A.<sup>2</sup> Lamellae equal or with a few shorter ones.

B.<sup>1</sup> Stipe yellow, at least at base.

C.<sup>1</sup> Pileus red, becoming yellowish at center or entirely so; stipe orange-yellow at base; lamellae pale ochraceous. S. 17: 34; B. T. 31: 179; Oh. Nat. 10: 177.....*R. luteobasis* Peck

C.<sup>2</sup> Pileus wholly yellow, sometimes mealy; stipe wholly yellow; lamellae white. M. B. 116: 78; K. 72; Mc. 197; S. 9: 60.....*R. flavida* Frost

B.<sup>2</sup> Stipe white or whitish, red or reddish.

C.<sup>1</sup> Lamellae forking much throughout.

D.<sup>1</sup> Lamellae close; pileus purplish, umber or green or with these colors mingled. M. B. 105: 41; K. 73; H. 190..... *R. variata* Bann.

D.<sup>2</sup> Lamellae subdistant; pileus yellowish-green or umber-green. S. 456; M. B. 116: 74; K. 73; Mc. 191; H. 194; St. 2: 116.

*R. furcata* (Pers.) Fr.

C.<sup>2</sup> Lamellae not often forking or only near stipe.

D.<sup>1</sup> Lamellae or spores, usually both, white or whitish to cream color.

E.<sup>1</sup> Pileus some shade of red or purple.

F.<sup>1</sup> Taste acrid.

G.<sup>1</sup> Pileus dry, margin even. S. 462; M. B. 116: 79; St. 2: 120; K. 67; Mc. 196; H. 195....*R. rubra* Fr.

G.<sup>2</sup> Pileus viscid or subviscid; margin striate or sulcate, tuberculate.

H.<sup>1</sup> Pileus 2-5 cm. broad; lamellae close. S. 472; St. 2: 126; M. B. 116: 88; Mc. 203; H. 192; St. 2: 126.

*R. fragilis* (Pers.) Fr.

H.<sup>2</sup> Pileus usually 5-10 cm. broad; lamellae subdistant. S. 469; M. B. 116: 87; K. 78; Mc. 201; H. 193; St. 2: 125.

*R. emetica* Fr.

F.<sup>2</sup> Taste mild.

G.<sup>1</sup> Stipe becoming blackish when bruised or dried; pileus glabrous, bright red, margin striate. B. T. 33: 214...*R. nigrescentipes* Peck

G.<sup>2</sup> Stipe not becoming blackish.

H.<sup>1</sup> Pileus tuberculose-striate on margin, less than 3.5 cm. broad. S. 479; K. 85; M. B. 116: 95; Mc. 208.

*R. puellaris* Fr.

H.<sup>2</sup> Pileus even on margin, more than 3.5 cm. (except sometimes *R. purpurina*.)

I.<sup>1</sup> Pileus dry, subvelvety or with velvety appearance, rimose-areolate, sometimes becoming yellowish; stipe usually red or tinged with red. S. 461; St. 2: 119; K. 68; M. B. 116: 79; Mc. 195; H. 187.

*R. lepida* Fr.

I.<sup>2</sup> Pileus glabrous, viscid, not rimose; stipe white (except in *R. purpurina*).

J.<sup>1</sup> Pileus rugose-wrinkled; cuticle not reaching margin; stipe solid. S. 465; St. 2: 122; K. 74; M. B. 116: 82; Mc. 198; H. 189.

*R. vesca* Fr.

J.<sup>2</sup> Pileus not rugose; stipe stuffed or spongy within, sometimes hollow when old.

K.<sup>1</sup> Pileus deep red; lamellae rather narrow, floccose-crenulate on edge. S. 474; M. B. 116:89; Mc. 188; K. 83; H. 196.

*R. purpurina* Q. & S.

K.<sup>2</sup> Pileus variable in color, purplish, bluish, yellowish, etc.; lamellae broad. S. 465; M. B. 116:82; St. 2:122; K. 74; H. 188; Mc. 198.

*R. cyano.xantha* (Schaeff.) Fr.

E.<sup>2</sup> Pileus without red or purple.

F.<sup>1</sup> Pileus white to yellow or brownish.

G.<sup>1</sup> Margin of pileus even or nearly so; lamellae distant.

H.<sup>1</sup> Pileus very viscid. S. 17:33; M. B. 116:83; Oh. Nat. 10:177.....*R. earlei* Peck

H.<sup>2</sup> Pileus not viscid, white. S. 459; St. 2:118; Mc. 194; M. 186.

*R. lactea* (Pers.) Fr.

G.<sup>2</sup> Margin of pileus deeply striate and tuberculate; lamellae rather close.

H.<sup>1</sup> Pileus glutinous at least when young, usually more than 6 cm. broad; plants with amygdaline odor. S. 467; M. B. 116:85; St. 2:124; K. 78; Mc. 199; H. 186; M. 187.

*R. foetens* (Pers.) Fr.

H.<sup>2</sup> Pileus viscid but not glutinous,  
usually less than 6 cm. broad;  
odor not marked. S. 470; Mc.  
202; St. 2: 126.

*R. pectinata* (Bull.) Fr.

F.<sup>2</sup> Pileus some shade of green, sometimes  
fading to ochraceous-green or umber.

G.<sup>1</sup> Pileus areolate except center; margin  
striate; sometimes subviscid. M.  
B. 116: 77; K. 72; Oh. Nat. 10:  
177-8; S. 9: 61.

*R. crustosa* Peck

G.<sup>2</sup> Pileus with flocculent patches or  
warts, dry; margin even. S. 460;  
K. 72; M. B. 116: 76; Mc. 194;  
H. 190; St. 2: 119.

*R. virescens* (Schaeff.) Fr.

D.<sup>2</sup> Lamellae and spores yellow or ochraceous.

E.<sup>1</sup> Pileus viscid, at least slightly, more or less  
polished, glabrous, margin usually striate.

F.<sup>1</sup> Pileus less than 5 cm. broad; stipe rosy-  
mealy. S. 474; M. B. 116: 96; K. 86;  
Mc. 209; H. 191.

*R. roseipes* (Sacc.) Bres.

F.<sup>2</sup> Pileus broader than 5 cm.; stipe not rosy-  
mealy.

G.<sup>1</sup> Pileus orange-red, becoming paler;  
flesh becoming cinereous with age  
or when broken. S. 476; M. B.  
116: 94; K. 88; Mc. 205; St. 2:  
128. . . . . *R. decolorans* Fr.

G.<sup>2</sup> Pileus red, purplish-red, or brownish  
red, or with green shades, not  
orange-red; flesh not becoming  
cinereous.

H.<sup>1</sup> Lamellae close, rather narrow,  
pulverulent; spores yellow;



pileus bay-brown-purplish. S.  
477; M. 187; St. 2: 129.

*R. nitida* (Pers.) Fr.

H.<sup>2</sup> Lamellae distant or sub-distant,  
broad.

I.<sup>1</sup> Spores ochraceous; lamellae  
not pulverulent; stipe usu-  
ally variegated reddish.  
S. 479; M. B. 116:98;  
K. 69; Mc. 207; H. 186;  
St. 2: 129.

*R. alutacea* Fr.

I.<sup>2</sup> Spores yellow; lamellae pul-  
verulent; stipe white. S.  
475; H. 191; M. B. 116:  
93; K. 84; Mc. 204; St.  
2: 127.

*R. integra* (L.) Fr.

E.<sup>2</sup> Pileus dry, unpolished or pruinose; margin  
usually even.

F.<sup>1</sup> Pileus with whitish pruinose bloom;  
spores pale yellow. S. 464; M. B.  
116:81; K. 70; Mc. 209.

*R. mariae* Peck

F.<sup>2</sup> Pileus without whitish bloom.

G.<sup>1</sup> Pileus subvelvety, often rimose;  
spores yellowish; lamellae not  
powdery. S. 461; M. B. 116:79;  
K. 68; Mc. 195; H. 187.

*R. lepida* Fr.

G.<sup>2</sup> Pileus unpolished merely, not rimose;  
spores ochraceous, dusting the  
lamellae. S. 14:98; M. B. 116:  
80; K. 68; Mc. 193; H. 187.

*R. ochrophylla* Peck

NOTES.

*R. cyanoxantha*, *R. integra*, *R. roseipes*, *R. adusta*, *R. purpurina*, *R. fragilis* and *R. nigricans* have not been definitely reported from Ohio as yet. Their range, however, makes it likely that they occur here and they are included in the key for convenience in determination.

Morgan reports *R. lutea* Fr. but from his notes it is evident that his plants should be referred to *R. flavida* which is rather frequent in southwestern Ohio during some seasons. *R. lutea* has not been otherwise reported and is omitted.

Most American plants formerly referred to *R. furcata* are now more properly referred to *R. variata*. It is uncertain at present whether the true *R. furcata* occurs in Ohio.

CANTHARELLUS ADANS.

- A.<sup>1</sup> Whole plant bright cinnabar-red when fresh. S. 414; M. B. 1<sup>2</sup>:39; N. A. F. 170; M. 189; H. 203.

*C. cinnabarinus* Schw.

- A.<sup>2</sup> Plants not as above.

- B.<sup>1</sup> Pileus deeply infundibuliform.

- C.<sup>1</sup> Lamellae close; pileus more than 5 cm. broad. S. 491; M. B. 1<sup>2</sup>:37; H. 200; N. A. F. 168; Mc. 218 .....*C. floccosus* Schw.

- C.<sup>2</sup> Lamellae distant; pileus less than 5 cm. broad. S. 490; N. A. F. 168; M. B. 1<sup>2</sup>:41; H. 203.

*C. infundibuliformis* (Scop.) Fr.

- B.<sup>2</sup> Pileus plane or depressed, not infundibuliform.

- C.<sup>1</sup> Pileus cinereous or grayish brown. S. 485; N. A. F. 170; Mc. 217; M. B. 1<sup>2</sup>:36.

*C. umbonatus* Fr.

- C.<sup>2</sup> Pileus yellow or orange, rarely ochraceous.

- D.<sup>1</sup> Lamellae close; plants orange. S. 483; N. A. F. 169; M. B. 1<sup>2</sup>:35; H. 200; Mc. 216; A. 129; M. 189.....*C. aurantiacus* Fr.

D.<sup>2</sup> Lamellae distant; plants usually yellow.

E.<sup>1</sup> Pileus thick, 3 cm. or more broad when mature. S. 482; N. A. F. 169; M. B. 1<sup>2</sup>:38; H. 198; Mc. 215; A. 128; M. 188 ..... *C. cibarius* Fr.

E.<sup>2</sup> Pileus thin, 1-2.5 cm. broad. S. 483; N. A. F. 169; M. B. 1<sup>2</sup>:40; Mc. 216; M. 188  
*C. minor* Peck

#### NOTES.

Murrill regards the name *Cantharellus* as a variant in spelling of *Chanterel* and discusses the genus under the latter name (N. Am. Flora 9<sup>3</sup>:167). He describes *C. umbonatus*, *C. aurantiacus* and *C. cibarius* respectively as *Chanterel muscoides* (Wulf.) Murrill, *Chanterel alectorolophoides* (Schaeff.) Murrill, and *Chanterel Chanterellus* (L.) Murrill.

Plants referred by Hard to *C. brevipes* Peck were probably young specimens of *C. floccosus*.

Fries, followed by Saccardo, placed *C. cinnabarinus* in the genus *Hygrophorus*. American writers regard this species as a good *Cantharellus*.

#### NYCTALIS FR.

Pileus white to brownish, usually powdered with brownish, stellate conidia; lamellae distant; plants on decaying Agarics. S. 501; N. A. F. 9<sup>3</sup>:166; H. 204; St. 2:138.

*N. asterophora* Fr.

This species is published in the North American Flora as *Asterophora clavus* (Schaeff) Murrill.

#### HELIOMYCES LEV.

*Marasmius nigripes* (Sch.) Fr. is placed in this genus by Morgan (Jour. Myc. 12:93). It will be easily recognized by the thin, white pileus and the black stipe which has a white pruinose covering. In dried specimens the stipe becomes pale brownish. S. 534; M. 193; H. 152.

MARASMIUS FR.

A.<sup>1</sup> Stipe glabrous (except perhaps at base), horny, polished.

B.<sup>1</sup> Pileus radiate-sulcate or deeply striate.

C.<sup>1</sup> Lamellae joined behind in a collar encircling the stipe and free from it.

D.<sup>1</sup> Pileus umbonate. S. 542; H. 146; St. 2:150;  
J. M. 12:1.....*M. graminum* (Lib.) Berk.

D.<sup>2</sup> Pileus umbilicate, but often with a small umbo within the depression.

E.<sup>1</sup> Stipe capillary, scarcely thicker than a hair; pileus pale tan; lamellae subdistant. S. 541; M. 194; J. M. 11:247.

*M. capillaris* Morg.

E.<sup>2</sup> Stipe somewhat thicker; lamellae distant; pileus white or whitish. S. 541; P. R. 23:125; H. 143; St. 2:149; J. M. 11:247.

*M. rotula* (Scop.) Fr.

C.<sup>2</sup> Lamellae not joined in a collar.

D.<sup>1</sup> Pileus ochraceous or ochraceous-red; stipe without purple tints, blackish-brown below, paler above. S. 535; M. 193; J. M. 11:241; P. R. 23:126 .....*M. campanulatus* Peck

D.<sup>2</sup> Pileus purplish to purplish-brown; stipe purplish when young, becoming brown. S. 535; H. 146, 148; J. M. 11:240.....*M. siccus* Schw. J. M. 11:207.....*M. bellipes* Morg.

B.<sup>2</sup> Pileus not sulcate.

C.<sup>1</sup> Plants with odor of garlic.

D.<sup>1</sup> Pileus grayish-brown, reddish-brown or paler; stipe entirely glabrous. S. 525; H. 144; Mc. 226; St. 2:146; J. M. 11:234.

*M. scorodoni* Fr.

D.<sup>2</sup> Pileus white or whitish; stipe subtomentose at base. S. 515; H. 145; M. 192; J. M. 11:206.

*M. prasiosmus* Fr.

C.<sup>2</sup> Plants without alliaceous odor.

D.<sup>1</sup> Pileus white or whitish.

E.<sup>1</sup> Stipe arising from a more or less abundant mycelium, not inserted.

F.<sup>1</sup> Lamellae rather distant, sinuate; stipe entirely glabrous. H. 151; J. M. 11:206 ..... *M. delectans* Morg.

F.<sup>2</sup> Lamellae rather close, nearly free; stipe subpruinose when dry, strigose at base. S. 520; St. 2:144; J. M. 11:207 ... *M. erythropus* (Pers.) Fr.

E.<sup>2</sup> Stipe inserted, mycelium within substratum and invisible. S. 525; H. 145; Mc. 226; M. 192; St. 2:146; J. M. 11:235.

*M. calopus* (Pers.) Fr.

D.<sup>2</sup> Pileus some shade of brown, yellow, reddish or purplish.

E.<sup>1</sup> Pileus umbonate; plants growing in a tuft with stipes more or less united. S. 522; J. M. 11:238 ..... *M. cucurbitula* Mont.

E.<sup>2</sup> Pileus not umbonate; stipes not united.

F.<sup>1</sup> Lamellae united behind but free from stipe; pileus reddish-gray. S. 511; H. 145; M. 192; J. M. 11:208; P. R. 24:76 ..... *M. anomalus* Peck

F.<sup>2</sup> Lamellae not united behind, attached to stipe.

G.<sup>1</sup> Lamellae whitish, close; pileus about 1 cm. broad, striatulate; stipe white at top. S. 543; H. 138; P. R. 23:126; J. M. 11:245.

*M. androsaceus* (L.) Fr.

G.<sup>2</sup> Lamellae purplish-gray, subdistant; pileus 4-6 mm. broad, not striate; stipe not white at top. S. 14:104;

J. M. 11: 245; Jour. Cin. Soc. Nat.  
Hist. 18: 36, (pl. 1 f. 2).

*M. melanopus* Morg.

A.<sup>2</sup> Stipe pruinose, pubescent, velvety-tomentose, etc., not glabrous.

B.<sup>1</sup> Stipe solid or stuffed, not hollow at least when young, not horny.

C.<sup>1</sup> Taste mild; stipe not strigose or downy at the base.

D.<sup>1</sup> Lamellae broad, whitish or yellowish. S. 510;  
Mc. 224; A. 131; H. 136; St. 2: 142; J. M.  
11: 205; M. 190; P. R. 23: 124.

*M. orcadus* Fr.

D.<sup>2</sup> Lamellae narrow, brown or brownish. S. 511;  
M. 190; J. M. 11: 205; P. R. 23: 125.

*M. plancus* Fr.

C.<sup>2</sup> Taste acrid or bitter; base of stipe strigose or conspicuously downy.

D.<sup>1</sup> Margin of pileus not striate; lamellae free, distant. S. 504; St. 2: 140; H. 138; Mc. 223; M.  
189; J. M. 11: 202. . . . . *M. urens* Fr.

D.<sup>2</sup> Margin striate; lamellae attached or seceding, close or subdistant.

E.<sup>1</sup> Lamellae rather broad, close; stipe yellow or rufescent. S. 504; J. M. 11: 204; St.  
2: 141; H. 148, 149; M. 190; Mc. 223.

*M. peronatus* Fr.

E.<sup>2</sup> Lamellae narrow, subdistant; stipe reddish-brown above, to blackish-brown at base.  
S. 16: 57; P. R. 51: 287; J. M. 11: 202.

*M. subnudus* (Ellis) Peck

B.<sup>2</sup> Stipe hollow.

C.<sup>1</sup> Pileus white, whitish or pallid.

D.<sup>1</sup> Lamellae decurrent.

E.<sup>1</sup> Pileus usually less than 6 mm. broad. J. M.  
12: 6; M. 193. . . . . *M. claviformis* Berk.

E.<sup>2</sup> Pileus 6-15 mm. broad. S. 561; J. M. 12: 5.  
*M. leucocephalus* Mont.

D.<sup>2</sup> Lamellae not decurrent.

E.<sup>1</sup> Lamellae close.

F.<sup>1</sup> Plants with odor of garlic; margin not striate. S. 515; M. 192; J. M. 11: 206; H. 145..... *M. prasiosmus* Fr.

F.<sup>2</sup> Plants without alliaceous odor; margin striate. S. 517; J. M. 11: 206.

*M. semisquarrosus* B. & C.

E.<sup>2</sup> Lamellae distant or subdistant.

F.<sup>1</sup> Margin of pileus more or less striate or plicate-sulcate; stipe brownish or blackish beneath the covering.

G.<sup>1</sup> Lamellae adnexed. S. 533; H. 142; J. M. 11: 212.

*M. candidus* (Bolt.) Fr.

G.<sup>2</sup> Lamellae adnate.

H.<sup>1</sup> Pileus about 1 cm. or more broad; lamellae rather broad and numerous; stipe dilated at base. S. 534; M. 193; H. 152; J. M. 12: 93.

*M. nigripes* (Schw.) Fr.

H.<sup>2</sup> Pileus usually much less than 1 cm. broad; lamellae narrow, veinlike, few, very distant; stipe inserted. S. 559;

J. M. 12: 3. *M. epiphyllus* Fr.

J. M. 12: 2. *M. felix* Morg.

F.<sup>2</sup> Pileus not striate or sulcate; stipe whitish or rufescent.

G.<sup>1</sup> Lamellae adnate; stipe usually less than 2 cm. long, rufescent toward the base. S. 531; St. 2: 148; J. M. 11: 211; H. 149.

*M. ramcalis* (Bull.) Fr.

G.<sup>2</sup> Lamellae adnexed; stipe usually



longer, entirely white. S. 532; J. M. 11: 237; M. 192.

*M. opacus* B. & C.

C.<sup>2</sup> Pileus yellowish, brownish, reddish-brown, etc.

D.<sup>1</sup> Lamellae free or seceding.

E.<sup>1</sup> Lamellae brown or brownish; stipe not strigose at base. S. 511; P. R. 23: 125; J. M. 11: 205; M. 190. . . . . *M. plancus* Fr.

E.<sup>2</sup> Lamellae whitish; stipe strigose at base. S. 538; J. M. 11: 208. . . *M. sullivantii* Mont.

D.<sup>2</sup> Lamellae adnate or adnexed.

E.<sup>1</sup> Stipe distinctly velvety, tomentose or hairy.

F.<sup>1</sup> Lamellae distant or subdistant.

G.<sup>1</sup> Plants growing on old wood; stipe long rooting. S. 537; J. M. 11: 239. . . . . *M. macrorrhizus* Mont.

G.<sup>2</sup> Plants growing on ground among leaves, etc.; stipe not definitely rooting.

H.<sup>1</sup> Pileus plicate-striate. M. 191; J. M. 11: 239.

*M. pyrrocephalus* Berk.

H.<sup>2</sup> Pileus not plicate-striate.

I.<sup>1</sup> Stipe glabrous toward the top, not thickened at the base. S. 517; P. R. 25: 79-80; J. M. 11: 206; H. 145.

*M. semihirtipes* Peck

I.<sup>2</sup> Stipe thickened at the base, not glabrous at the top. S. 513; J. M. 11: 203.

*M. spongiosus* B. & C.

F.<sup>2</sup> Lamellae close.

G.<sup>1</sup> Pileus striate when moist.

H.<sup>1</sup> Pileus not more than 12 mm. broad; stipe rooting, usually

more than 5 cm. long. S. 517; P. R. 26: 66; H. 146; J. M. 11: 240.

*M. elongatipes* Peck

H.<sup>2</sup> Pileus more than 12 mm. broad; stipe usually less than 5 cm. long, not rooting. S. 541; J. M. 11: 203.

*M. rigidus* Mont.

G.<sup>2</sup> Pileus not striate.

H.<sup>1</sup> Lamellae rather broad; stipe thickened below. S. 513; J. M. 11: 203.

*M. spongiosus* B. & C.

H.<sup>2</sup> Lamellae rather narrow; stipe not thickened at base. S. 521; H. 140; P. R. 23: 124; J. M. 11: 209. *M. velutipes* B. & C.

E.<sup>2</sup> Stipe pruinat or minutely pubescent, not tomentose or velvety.

F.<sup>1</sup> Lamellae narrow; pileus becoming umbilicate, not more than 12 mm. broad. S. 14: 108; B. T. 23: 413; J. M. 11: 236 ..... *M. gregarius* Peck

F.<sup>2</sup> Lamellae rather broad; pileus not umbilicate, usually more than 1.5 cm. broad.

G.<sup>1</sup> Lamellae distant; margin of pileus slightly or not at all rugose-sulcate. S. 565; J. M. 11: 203.

*M. viticola* B. & C.

G.<sup>2</sup> Lamellae rather close; margin rugose-sulcate. S. 524; H. 148; M. 192; J. M. 11: 204.

*M. fagineus* Morg.

NOTES.

Remarkably caespitose plants referred to this genus by the student should usually be looked for in the genus *Collybia*. Ohio plants usually known as *Collybia lachnophylla* are called *Marasmius cohaerens* (Fr.) Bres. by some writers.

Montagne's species have not been recognized by collectors since their publication.

The plants reported by Morgan in the Mycologic Flora as *M. fusco-purpureus* Pers. were later referred to *M. semihirtipes*.

*M. elongatipes* was first published as *M. longipes*. The latter name was preoccupied.

*M. siccus*, *M. bellipes*, *M. campanulatus* and several other species not reported from Ohio are very closely related. The pileus of *M. siccus* is described as "roseo-pallido"; that of *M. campanulatus* as ochraceous-red. A plant with the pileus bright ochraceous is frequent in Ohio. Another with the pileus pinkish to purplish also occurs. In very young plants the stipe is of the same color, but becomes blackish-brown as it matures, beginning at the base, the apex remaining purplish for some time. Morgan has described this plant as *M. bellipes*. Even in dried specimens (at least if not too old) the plants can be readily distinguished. In this paper the plants with ochraceous pileus are regarded as *M. campanulatus*, while those with pinkish or purplish pileus are regarded as *M. siccus* with *M. bellipes* as a synonym.

LENTINUS FR.

A.<sup>1</sup> Plants with distinct stipe.

B.<sup>1</sup> Pileus scaly or squamulose.

C.<sup>1</sup> Pileus umbilicate to infundibuliform, with blackish, hairy scales. S. 580; St. 2: 154; Mc. 229; M. B. 131: 43; M. 194.....*L. tigrinus* Fr.

C.<sup>2</sup> Pileus convex to plane.

D.<sup>1</sup> Margin of pileus sulcate. S. 584; M. B. 131: 44; M. 194.....*L. sulcatus* Berk.

- D.<sup>2</sup> Margin even.
  - E.<sup>1</sup> Lamellae sinuate-decurrent, broad. S. 581; M. B. 131:42; H. 228; St. 2:155; A. 135; Mc. 230.....*L. lepideus* Fr.
  - E.<sup>2</sup> Lamellae decurrent, not sinuate, rather narrow. M. B. 131:43.....*L. spretus* Peck
- B.<sup>2</sup> Pileus glabrous, depressed to infundibuliform.
  - C.<sup>1</sup> Stipe sulcate, glabrous; lamellae broad. S. 594; M. B. 131:45; St. 2:156; M. 195; H. 229; Mc. 239; *L. cochleatus* Fr.
  - C.<sup>2</sup> Stipe not sulcate, fibrillose; lamellae narrow. S. 595; M. 195.....*L. curtisii* Sacc. & Cub.
- A.<sup>2</sup> Plants sessile, without distinct stipe.
  - B.<sup>1</sup> Pileus costate-corrugate.
    - C.<sup>1</sup> Pileus reddish-brown, tomentose at maturity. S. 608; M. B. 131:45; M. 196.....*L. ursinus* Fr.
    - C.<sup>2</sup> Pileus tan or alutaceous, surface broken up into scales or fibrous teeth at maturity. S. 609; M. 196; St. 2:157; H. 226-7.....*L. vulpinus* Fr.
  - B.<sup>2</sup> Pileus even, not costate.
    - C.<sup>1</sup> Pileus densely strigose, brown-tawny. S. 611; M. 196.....*L. pelliculosus* Schw.
    - C.<sup>2</sup> Pileus tomentose only, reddish-brown. S. 608; M. B. 131:45; M. 196.....*L. ursinus* Fr.

#### NOTES.

Morgan lists *L. lecomtei* Fr. and *L. strigosus* Fr. He later decided that the plants so referred were species of *Panus* (*P. rudis* Fr.).

*L. caespitosus* Berk., reported by Lea and Morgan is not a *Lentinus*. *Pleurotus caespitosus* B. & C. is another name for the same plants. Lloyd believes it is the plant now known as *Clitocybe monadelphæ* Morg. and the description bears out the opinion.

Peck separated *L. spretus* from *L. lepideus* because the lamellae are not sinuate and the spores are smaller. A collection was made at Oxford in 1910.

*L. sullivantii* Mont. is probably the same as *Clitocybe illudens* Schw. *L. robinsonii* Mont. is certainly not a *Lentinus*. The pileus is said to be tubular at first, then cubshaped, the lamellae are close, linear, long-decurrent. Probably a *Cantharellus*.

*L. curtisii* is *L. omphalodes* B. & C., not *L. omphalodes* Fr.

*L. ursinus* and *L. vulpinus* have doubtless been confused in America. Peck describes the former as being sometimes costate-corrugate. This character is, in Europe, ascribed to *L. vulpinus* only.

With the meager description of *L. pelliculosus* it is difficult to separate it from *L. ursinus*. It may be only a more hairy form of that species — at least the Ohio plants referred to it.

*Lentodium squamulosum* Morg. is often regarded as an abnormal form of *L. tigrinus*. It may be recognized by the mycelium or compact tomentum which grows over the hymenium sometimes obliterating the lamellae. Peck says that both forms are sometimes found growing on the same stump (M. B. 131:441).

## PANUS FR.

A.<sup>1</sup> Pileus scaly, pubescent, strigose or furfuraceous.

B.<sup>1</sup> Lamellae broad, distant, pileus white.

C.<sup>1</sup> Pileus 5-8 cm. broad, with a matted covering of rather delicate hairs. S. 620; H. 226; Mc. 234.

*P. levis* B. & C.

C.<sup>2</sup> Pileus 10-20 cm. broad, with a coarse strigose pubescence. S. 620; H. 223; Mc. 234.

*P. strigosus* B. & C.

B.<sup>2</sup> Lamellae narrow, close.

C.<sup>1</sup> Stipe lateral; pileus 2-4 cm. broad.

D.<sup>1</sup> Pileus and lamellae cinnamon; pileus furfuraceous-scaly; lamellae determinate. S. 622; M. 197; H. 223; A. 135; Mc. 236.

*P. stipticus* (Bull.) Fr.

D.<sup>2</sup> Pileus and lamellae white to yellowish; pileus pubescent; lamellae decurrent. M. 197.

*P. angustatus* Berk.

C.<sup>2</sup> Stipe eccentric; pileus 3 cm. or more broad.

D.<sup>1</sup> Pileus strigose, depressed to infundibuliform, rufescent-tan, purplish when young; stipe hirsute. S. 616; H. 224; A. 135.

*P. rudis* Fr.

D.<sup>2</sup> Pileus becoming scaly, conchate, cinnamon or paler; stipe pubescent at the base. S. 615; H. 223; M. 196; Mc. 232.

*P. conchatus* Fr.

A.<sup>2</sup> Pileus glabrous.

B.<sup>1</sup> Lamellae decurrent or sub-decurrent.

C.<sup>1</sup> Stipe lateral; pileus striate on the margin, less than 3 cm. broad. M. 197.....*P. dealbatus* Berk.

C.<sup>2</sup> Stipe eccentric; pileus usually more than 5 cm. broad, margin not striate.

D.<sup>1</sup> Stipe solid, pubescent or tomentose.

E.<sup>1</sup> Pileus cinnamon to paler; stipe pubescent at the base. S. 615; H. 223; M. 196; Mc. 232 .....*P. conchatus* Fr.

E.<sup>2</sup> Pileus flesh-colored to violaceous; stipe with gray or violaceous down. S. 615; H. 225; Mc. 233.....*P. torulosus* Fr.

D.<sup>2</sup> Stipe spongy-stuffed, glabrous. S. 617.

*P. robinsonii* B. & Mont.

B.<sup>2</sup> Lamellae free. S. 620.....*P. sullivantii* Mont.

#### NOTES.

Berkeley's description of *P. angustatus* agrees well with the plant we know as *Pleurotus petaloides* Fr. Berkeley says: "Lea describes it as tough when fresh, and it is therefore placed in the genus *Panus*."

The plants now known as *P. rudis* have been reported also as *Lentinus strigosus* Fr., and *Lentinus lecomtei* Fr.

Neither *P. robinsonii* nor *P. sullivantii* have been identified since Sullivant's time.

TROGIA FR.

Lamellae white; pileus sessile, margin sterile. S. 636; N. A. F. 9<sup>2</sup>:164; St. 2:162; M. 198; H. 234; A. 137.

*T. crispa* (Pers.) Fr.

This species is described in the North American Flora as *Plicatura faginea* (Schrad.) P. Karst.

SCHIZOPHYLLUM FR.

Pileus white or whitish; lamellae gray to pale brownish. S. 655; St. 2:162; M. 198; H. 232; A. 136.

*S. commune* Fr.

This species is sometimes published as *S. alneum* (L.) Schroet.

LENZITES FR.

Context and hymenium, white or whitish. S. 638; St. 2:163; N. A. F. 9<sup>2</sup>:127; H. 231; M. 197.....*L. betulina* (L.) Fr.

Context and hymenium brown or brownish.

Lamellae thick, distant (about 1 mm.). S. 639; N. A. F. 9<sup>2</sup>:130; H. 232; M. 197; St. 2:164....*L. sepiaria* (Wulf.) Fr.

Lamellae thin, rather close (about 0.5 mm.). S. 638,640; N. A. F. 9<sup>2</sup>:129; H. 232; M. 197; P. R. 26:67.

*L. trabea* (Pers.) Fr.

NOTE.

On account of the woody texture and the fact that the hymenium is often porose when young, Murrill places this genus in the Polyporaceae. He places the last two species in the genus *Gloeophyllum* under the names *G. hirsutum* (Schaeff.) Murrill and *G. trabeum* (Pers.) Murrill. The latter was reported from Ohio as *L. vialis* Peck.

VOLVARIA FR.

A.<sup>1</sup> Plants growing on wood; pileus 7-12 cm. broad, silky, white. S. 656; St. 183; A. 140; Mc. 240; H. 238; M. 97.

*V. bombycina* (Pers.) Fr.



A.<sup>2</sup> Plants not growing on wood.

B.<sup>1</sup> Pileus usually more than 5 cm. broad.

C.<sup>1</sup> Pileus not distinctly viscid, streaked with blackish fibrils. S. 657; St. 183; H. 242; Mc. 240.

*V. volvacea* Bull.

C.<sup>2</sup> Pileus viscid, glabrous.

D.<sup>1</sup> Margin even; pileus whitish or grayish. S. 661; St. 185; Mc. 242 .....*V. speciosa* Fr.

D.<sup>2</sup> Margin striate; pileus smoky-brown. S. 662; St. 185; Mc. 242 .....*V. gloiocephala* Fr.

B.<sup>2</sup> Pileus less than 4 cm. broad.

C.<sup>1</sup> Stipe pubescent with spreading hairs; pileus with minute hairy scales. S. 658; P. R. 29:39.

*V. pubescentipes* Peck

C.<sup>2</sup> Stipe without erect, spreading hairs; pileus silky.

D.<sup>1</sup> Margin of pileus striate; stipe solid. S. 16:70; H. 241; B. T. 26: 64....*V. umbonata* Peck

D.<sup>2</sup> Margin even.

E.<sup>1</sup> Pileus umbonate; stipe stuffed. S. 663; St. 186.....*V. parvula* Weinm.

E.<sup>2</sup> Pileus not umbonate; stipe solid. Berk. Out. 140; H. 242 .....*V. pusilla* Pers.

#### NOTE.

*V. parvula* and *V. pusilla* are regarded as synonyms by some mycologists.

#### PLUTEUS FR.

A.<sup>1</sup> Pileus glabrous.

B.<sup>1</sup> Pileus fleshy, more than 5 cm. broad, whitish to brown or brownish; margin even. S. 665; St. 187; P. R. 38:134; H. 237; Mc. 243; A. 138; M. 98.

*P. cervinus* Schaeff.

B.<sup>2</sup> Pileus thin, usually less than 5 cm. broad; margin striate.

C.<sup>1</sup> Pileus cinnamon-brown. S. 676; Mc. 249; St. 190; M. 98 .....*P. chrysophacus* Schaeff.

C.<sup>2</sup> Pileus yellow or reddish-yellow.

D.<sup>1</sup> Pileus rugose-reticulate; stipe hollow. S. 679;  
P. R. 38: 137; Mc. 248. *P. admirabilis* Peck  
S. 678 .....? *P. chrysophlebius* B. & Rav.

D.<sup>2</sup> Pileus not as above; stipe solid. S. 675; P. R.  
38:137; St. 190; M. 98.

*P. leoninus* Schaeff.

A.<sup>2</sup> Pileus not glabrous.

B.<sup>1</sup> Pileus pruinose or granular and rugose-wrinkled.

C.<sup>1</sup> Stipe granular or velvety-pubescent, brown or yellowish-brown. S. 673; P. R. 38:135; Mc. 247;  
H. 238; M. 98.....*P. granularis* Peck

C.<sup>2</sup> Stipe glabrous, whitish or pale yellowish. S. 672;  
St. 189; P. R. 38:136 .....*P. nanus* Pers.

B.<sup>2</sup> Pileus fibrillose, hairy or squamulose, not rugose-wrinkled.

C.<sup>1</sup> Pileus thin, prominently striate, not over 4 cm. broad. S. 670; P. R. 38:137.

*P. longistriatus* Peck

C.<sup>2</sup> Pileus fleshy, not striate, usually more than 5 cm. broad. (See references above.)

*P. cervinus* Schaeff.

# NOTES.

*P. granularis* is given in Saccardo as *P. regularis*, probably through error.

*P. chrysophlebius* has not been reported for Ohio. It is here included in order to call attention to its close relationship to *P. admirabilis*.

## ENTOLOMA FR.

A.<sup>1</sup> Pileus minute-scaly, dry, 1-2 cm. broad, dark brown. S. 693; M. B. 131: 53..... *E. scabrinellum* Peck

A.<sup>2</sup> Pileus glabrous or somewhat fibrillose, not dry, usually more than 2 cm. broad.

B.<sup>1</sup> Pileus hygrophanous, becoming paler in drying.

C.<sup>1</sup> Pileus white or yellowish; stipe solid. S. 698; M. B. 131: 56; H. 244; A. 144....*E. grayanum* Peck

- C.<sup>2</sup> Pileus some shade of brown, or gray; stipe stuffed or hollow.
- D.<sup>1</sup> Pileus not umbonate; stipe pruinat. S. 694; M. B. 131: 56; M. 99; St. 198; H. 244; Mc. 153 .....*E. rhodopolium* Fr.
- D.<sup>2</sup> Pileus umbonate; stipe fibrillose or glabrous.
- E.<sup>1</sup> Stipe brown or brownish, 2-4 mm. thick. S. 698; A. 145; M. B. 131: 57; M. 99.  
*E. strictius* Peck
- E.<sup>2</sup> Stipe white or grayish, 4-8 mm. thick. S. 694; St. 198; Mc. 252; H. 247; M. B. 131: 57; M. 99.....*E. clypeatum* Linn.
- B.<sup>2</sup> Pileus moist or subviscid, not hygrophanous.
- C.<sup>1</sup> Stipe brown or brownish; pileus of same color, streaked with darker lines. H. 245-6; J. M. 12: 236-7 .....*E. subcostatum* Atk.
- C.<sup>2</sup> Stipe white to rufescent.
- D.<sup>1</sup> Stipe solid; pileus subumbonate; plants not growing on wood. S. 682.  
*E. demetriacum* B. & Mont.
- D.<sup>2</sup> Stipe hollow; pileus plane or depressed; plants growing on decaying wood. S. 683.  
*E. robinsonii* B. & Mont.

# CLITOPILUS FR.

- A.<sup>1</sup> Stipe stuffed or hollow; pileus hygrophanous, brown to grayish-brown, usually umbilicate, striatulate when moist. S. 9: 86; H. 251: P. R. 42: 43; Mc. 260.  
*C. subvilis* Peck
- A.<sup>2</sup> Stipe solid; pileus not hygrophanous, not umbilicate, not striatulate.
- B.<sup>1</sup> Pileus thin, rimose-areolate; taste bitter. S. 702; P. R. 42: 45; H. 252; Mc. 264.....*C. noveboracensis* Peck
- B.<sup>2</sup> Pileus rather thick, not rimose; taste mild.
- C.<sup>1</sup> Pileus pruinat or mealy; lamellae subdistant; stipe glabrous or villous at the base. S. 699; St. 202; Mc. 255; P. R. 42: 41; H. 249; A. 143.  
*C. prunulus* Scop.

C.<sup>2</sup> Pileus glabrous or slightly silky; lamellae close; stipe flocculose.

D.<sup>1</sup> Pileus slightly viscid when moist, whitish or yellowish; stipe short. S. 699; St. 203; H. 249; P. R. 42: 41; Mc. 256. . . . . *C. orcella* Bull.

D.<sup>2</sup> Pileus dry, grayish to grayish-brown. S. 701; P. R. 42: 42; H. 248; Mc. 257; M. 99.

*C. abortivus* B. & C.

### LEPTONIA FR.

Pileus not striate; edge of lamellae serrate, blackish. S. 710; H. 255; St. 208. . . . . *L. serrulata* Pers.

Pileus striate; lamellae unicolorous, edge entire.

Pileus and stipe brownish-green; lamellae greenish-white then flesh-color. S. 713; St. 210; H. 254. . . . . *L. incana* Fr.

Pileus at length scaly in the center, fuliginous or paler; stipe usually livid but variable in color; lamellae grayish-white.

S. 714; St. 211; A. 147; M. 100. . . . . *L. asprella* Fr.

Morgan reported *L. asprella* from the Miami valley. Hard lists the other two species but without a statement as to their collection.

### NOLANEA FR.

Pileus cinnamon-brown; lamellae bright flesh-color; stipe even.

S. 723; P. R. 24: 66; H. 255. . . . . *N. conica* Peck

Pileus smoky-brown; lamellae grayish; stipe striate. S. 716;

St. 212; H. 255. . . . . *N. pascua* Pers.

Hard describes these species but does not state that they were collected in Ohio.

### ECCILIA FR.

Lamellae distant. S. 730; St. 218; H. 252; Mc. 265.

*E. carneo-grisca* B. & Br.

Lamellae close. S. 729; H. 253; A. 148. . . . . *E. polita* Pers.

Both species are listed by Hard but no statement is made as to the occurrence of *E. polita* in Ohio.

CLAUDOPUS W. SMITH.

Plant yellow or buff; lamellae close, orange-yellow. S. 375; A. 149; H. 256; Mc. 267; M. 198; P. R. 39:67.

*C. nidulans* Pers.

Plant white; lamellae distant, white then flesh-color. S. 733; H. 256; St. 220; P. R. 39:68.....*C. variabilis* Pers.

*C. nidulans* is sometimes known as *Pleurotus nidulans* and is sometimes known in America as *Panus dorsalis* Bosc.

Hard includes *C. variabilis* in his book but without a statement as to its collection in Ohio.

PHOLIOTA FR.

A.<sup>1</sup> Plants growing on the ground.

B.<sup>1</sup> Stipe solid; lamellae serrulate; pileus wrinkled. S. 736; H. 260; St. 223; Mc. 270; M. B. 122:143.

*P. caperata* Pers.

B.<sup>2</sup> Stipe stuffed or hollow; edge of lamellae entire; pileus not wrinkled.

C.<sup>1</sup> Lamellae very broad; pileus dry, finally cracked; stipe stout, about 1 cm. in diameter. S. 738; St. 225; Mc. 271; H. 258; M. 101.. *P. dura* Bolt.

C.<sup>2</sup> Lamellae narrow; pileus moist, not cracking; stipe slender, not more than 5 mm. in diameter. S. 738; St. 226; Mc. 274; H. 257; A. 150; M. B. 122:148; M. 101.....*P. praecox* Pers.

A.<sup>2</sup> Plants growing on wood, rarely on the ground and then near decaying logs, etc.

B.<sup>1</sup> Pileus viscid.

C.<sup>1</sup> Lamellae narrow; pileus lemon-yellow. S. 753; M. B. 122:150; M. 102.....*P. limonella* Peck

C.<sup>2</sup> Lamellae broad.

D.<sup>1</sup> Stipe very stout, 1-2.5 cm. in diameter, solid, not scaly; pileus scarcely viscid. S. 747; St. 229; H. 263.....*P. heteroclita* Fr.

D.<sup>2</sup> Stipe usually less than 1 cm. in diameter, prominently scaly.

- E.<sup>1</sup> Pileus white except for the tawny, erect, pointed scales; lamellae sinuate, at first whitish. S. 750; M. B. 122:150; A. 152; Mc. 274; H. 266; M. 102.

*P. squarrosoides* Peck

- E.<sup>2</sup> Pileus yellow or yellowish-brown.

- F.<sup>1</sup> Lamellae at first yellow, close; stipe yellow to tawny-brown. S. 752; St. 232; M. B. 122:150; Mc. 276; A. 151; M. 103.....*P. adiposa* Fr.

- F.<sup>2</sup> Lamellae at first whitish or gray, subdistant, edge white-crenulate; stipe pallid or brownish. S. 760; M. B. 122:149; M. 102.....*P. albocrenulata* Peck

- B.<sup>2</sup> Pileus not viscid.

- C.<sup>1</sup> Pileus and stipe with prominent scales; lamellae rather narrow; stipe 6-12 mm. in diameter. S. 749; M. B. 122:152; A. 152; St. 230; Mc. 273; H. 268.....*P. squarrosa* Müll.

- C.<sup>2</sup> Pileus and stipe with small or appressed scales or not scaly.

- D.<sup>1</sup> Pileus more than 5 cm. broad; stipe more than 1 cm. in diameter.

- E.<sup>1</sup> Lamellae very broad, sinuate-adnexed; pileus white or slightly yellow; stipe white. S. 747; St. 229; H. 263....*P. heteroclita* Fr.

- E.<sup>2</sup> Lamellae narrow, adnate or slightly decurrent; pileus tawny or orange-yellow; stipe yellow. S. 751; St. 231; M. B. 122:154; H. 265; M. 103.....*P. spectabilis* Fr.

- D.<sup>2</sup> Pileus less than 5 cm. broad; stipe slender.

- E.<sup>1</sup> Pileus dry, not hygrophanous.

- F.<sup>1</sup> Stipe bulbous or tuberculate, lamellae sinuate-adnexed. S. 754; St. 233; M. 103.

*P. tuberculosa* (Schaeff) Fr.

*P. hormophora* Mont.

F.<sup>2</sup> Stipe not as above; lamellae adnate. S.  
755; St. 233; H. 264; M. B. 122: 154.

*P. curvipes* (A. & S.) Fr.

E.<sup>2</sup> Pileus hygrophanous, glabrous.

F.<sup>1</sup> Pileus less than 2 cm. broad; lamellae  
very broad for size of pileus; stipe  
subglabrous. S. 759; St. 235; H. 262;  
M. 104. .... *P. unicolor* Vahl.

F.<sup>2</sup> Pileus usually more than 2 cm. broad;  
stipe fibrillose or somewhat scaly.

G.<sup>1</sup> Margin of pileus even; lamellae  
rather broad; stipe blackish-brown  
below. S. 758; St. 235; Mc. 278;  
H. 263; M. 103.

*P. mutabilis* (Schaeff) Fr.

G.<sup>2</sup> Margin striate; lamellae narrow;  
stipe concolorous or paler. S.  
758; St. 235; M. 104; H. 265; Mc.  
279 ..... *P. marginata* Batsch

#### INOXYBE FR.

A.<sup>1</sup> Pileus and stipe squarrose- or tomentose-scaly, some shade  
of brown; stipe concolorous or nearly so.

B.<sup>1</sup> Pileus hemispherical to expanded, obtuse, floccose-scaly,  
scales of disk pointed; spores nodulose or angular. S.  
765; M. 105; M. B. 139: 51; St. 240.

*I. lanuginosa* Bull.

B.<sup>2</sup> Pileus convex to expanded, spores even or slightly ir-  
regular.

C.<sup>1</sup> Pileus umbonate; stipe soon hollow. S. 763; H. 271;  
M. 105; St. 240. .... *I. dulcamara* Alb. & Schw.

C.<sup>2</sup> Pileus not umbonate; stipe solid. S. 764; H. 271;  
St. 241 ..... *I. cincinnata* Fr.

A.<sup>2</sup> Pileus and stipe not squarrose-scaly, usually fibrillose; stipe  
paler than pileus or pileus at first whitish or pallid.

B.<sup>1</sup> Whole plant becoming red or reddish; flesh white. S.  
776; M. 106; St. 249. .... *I. dstricta* Fr.



B.<sup>2</sup> Plant not becoming red.

C.<sup>1</sup> Flesh of pileus and stipe reddish; with odor of pears.

S. 700; H. 272; M. 105; St. 242.

*I. piriodora* Pers.

C.<sup>2</sup> Flesh and odor not as above.

D.<sup>1</sup> Pileus not umbonate; stipe somewhat bulbous.

S. 775; M. 105; H. 272; St. 248; M. B. 139:

56 ..... *I. rimosa* Bull.

D.<sup>2</sup> Pileus umbonate; stipe not bulbous.

E.<sup>1</sup> Cuticle of pileus torn or cracked; lamellae  
adnate, whitish-crenulate on edge. S. 776;

M. 106; St. 248; M. B. 139: 56.

*I. eutheles* B. & Br.

E.<sup>2</sup> Pileus fibrillose, cuticle not torn or cracked;  
lamellae adnexed or sinuate-adnexed, edge  
not whitish-crenulate.

F.<sup>1</sup> Pileus white or whitish or rarely vio-  
laceous; stipe stuffed. S. 784; H.  
270; M. 106; St. 252; M. B. 139: 61.

*I. geophylla* Sowerb.

F.<sup>2</sup> Pileus ochraceous-yellow, stipe solid. S  
796; H. 270; M. B. 139: 62.

*I. subochracea* (Peck) Mass.

#### NOTES.

*I. auricoma* Batsch, listed by Lea, is regarded by Fries as a variety of *I. descissa*. Morgan, who worked in the same region as Lea, did not collect it. It is possible that Lea's plants were incorrectly determined. The species is omitted from the list.

It is worthy of note here that Peck enumerates 39 species for the state of New York. Of the 9 species reported from Ohio only 5 occur in Peck's list. It is remarkable that such a disparity should occur in states no more widely separated. It is probable, however, that further study of Ohio plants will add a number of species to the Ohio list.

HEBELOMA FR.

- A.<sup>1</sup> Pileus glutinous, with whitish superficial squamules, yellowish-white. S. 793; St. 273; M. B. 139:68; H. 273; Mc. 285 ..... *H. glutinosum* (Lind.) Fr.
- A.<sup>2</sup> Pileus moist or more or less viscid but not glutinous, not squamulose.
- B.<sup>1</sup> Lamellae very narrow; pileus whitish-tan or brick-color. S. 799; St. 260; M. B. 139:73; Mc. 286; H. 273; A. 158.....*H. crustuliniforme* (Bull.) Fr.
- B.<sup>2</sup> Lamellae broad.
- C.<sup>1</sup> Stipe solid.
- D.<sup>1</sup> Pileus yellow or tan; lamellae subdistant. S. 792; M. B. 139:70; Mc. 284; H. 273; St. 255; M. 107.....*H. fastibile* Fr.
- D.<sup>2</sup> Pileus brownish-clay; lamellae close. S. 16:92, 17:67; M. B. 139:71; H. 274.  
*H. pascuense* Peck
- C.<sup>2</sup> Stipe stuffed or hollow.
- D.<sup>1</sup> Pileus and stipe brown; plants growing on wood. S. 806; M. 107; M. B. 139:76.  
*H. illicitum* Peck
- D.<sup>2</sup> Pileus pallid or clay-colored; stipe white; plants with odor of radishes. S. 799; St. 259.  
*H. sinapizans* Fr. *H. repandum* Schum.

NOTES.

Plants collected by W. A. Kellerman were determined by A. P. Morgan as *H. repandum* which is given by Fries and Saccardo as a variety of *H. sinapizans*. Kellerman's photograph (Mycological Bulletin 5: 364) shows the stipe to be stuffed and hollow. In the European plant the stipe is said to be somewhat solid.

*H. glutinosum* and *H. crustuliniforme* have not been definitely reported for Ohio but probably occur here. They are included in the key for convenience.

*H. latericolor* Mont. (S. 803), described from Sullivan's material, is probably *Hypopholoma sublateritium*. The color of the pileus, habitat, season and other characters point to this conclusion. *H. erysibodes* Mont. (S. 795) and *H. pyrrolepidum* Mont. (S. 798) are doubtless species of *Inocybe*.

FLAMMULA FR.

A.<sup>1</sup> Stipe spindle-shaped, rooting; pileus reddish-brown. S. 818; St. 269; H. 286.....*F. fusus* Batsch.

A.<sup>2</sup> Stipe not spindle-shaped.

B.<sup>1</sup> Pileus viscid.

C.<sup>1</sup> Pileus with purple and bluish-green, often with other shades. S. 824; A. 156; M. 107.

*F. polychroa* Berk.

C.<sup>2</sup> Pileus yellow, buff or tawny.

D.<sup>1</sup> Flesh yellow; pileus smooth; plants growing on burnt ground or charcoal. S. 817; St. 268; H. 285; P. R. 50: 138.....*F. carbonaria* Fr.

D.<sup>2</sup> Flesh whitish; pileus appressed scaly, floccose or fibrillose; plants with different habitat.

E.<sup>1</sup> Stipe solid. S. 815; St. 266; P. R. 50: 138.

*F. lubrica* Fr.

E.<sup>2</sup> Stipe stuffed or hollow. B. T. 34: 100.

*F. betulina* Peck

B.<sup>2</sup> Pileus not viscid.

C.<sup>1</sup> Stipe solid; pileus more than 8 cm. broad. S. 14: 139; P. R. 50: 142; Mc. 292....*F. magna* Peck

C.<sup>2</sup> Stipe stuffed or hollow; pileus less than 8 cm. broad.

D.<sup>1</sup> Pileus glabrous, light yellow. S. 820; St. 270; H. 284; P. R. 50: 140; Mc. 291.

*F. flavida* Pers.

D.<sup>2</sup> Pileus floccose-squamulose, golden-tawny; lamellae broad; stipe often sulcate. S. 824; St. 272; P. R. 50: 142; M. 107.

*F. sapinea* Fr.

# NOTES.

*F. anepsia* Mont. (S. 812), was described from Sullivan's material. The pileus is said to be reddish-cinnamon; lamellae distant, adnate-decurrent, and stipe fistulous.

*F. flavida* has not been reported for Ohio but probably occurs.

*F. fusus* was collected by Hard at Chillicothe; *F. betulina* at Wooster by Van Hook; *F. magna* at Cleveland by Beardslee, and *F. lubrica* at Wooster by Selby. The first three are in the herbarium of the state botanist at Albany, and the last at the N. Y. Bot. Garden in New York City.

## NAUCORIA FR.

A.<sup>1</sup> Pileus viscid or somewhat so when moist; lamellae adnate, adnate-decurrent or emarginate-adnate.

B.<sup>1</sup> Pileus usually appressed-scaly; plants growing on or among mosses. H. 282; J. M. 12: 193.

*N. paludosella* Atk.

B.<sup>2</sup> Pileus glabrous; plants growing among grass.

C.<sup>1</sup> Pileus yellow or yellowish; stipe usually more than 4 mm. thick, and less than 5 cm. long. S. 843; M. 108; St. 283.....*N. vervacti* Fr.

C.<sup>2</sup> Pileus tawny-brown or ochraceous; stipe less than 4 mm. thick and usually more than 5 cm. long. S. 844; M. 108; St. 284; A. 153; Mc. 297.

*N. semiorbicularis* Bull.

A.<sup>2</sup> Pileus dry; lamellae adnexed. S. 844; H. 281; Mc. 296; St. 284.....*N. pediades* Fr.

## PLUTEOLUS FR.

Plants growing on dung, often cespitose; pileus pinkish-gray S. 11: 60; P. R. 46: 59.....*P. coprophilus* Peck

Plants growing on wood, not cespitose.

Pileus livid-gray, rugose-reticulate. S. 859; P. R. 46: 60; Mc. 282; St. 289; H. 275.....*P. reticulatus* Pers.

Pileus smoky-brown, not rugose.

Stipe brownish-fibrillose; pileus more or less lobed,  
5-7 cm. S. 867; M. 108....*P. mucidolens* Berk.

Stipe pallid, fibrillose; pileus not lobed, 3-4 cm. S.  
11: 60.....*P. leaianus* B. & C.

# NOTES.

*P. mucidolens* and *P. leaianus* were both collected by Lea near Cincinnati. They may represent one species.

Lloyd regards *P. coprophilus* the same plant as *Bolbitis radians*.

# GALERA FR.

A.<sup>1</sup> Plants growing on or among *Sphagnum*. S. 860; P. R. 46:  
66 .....*G. sphagnorum* Pers.

A.<sup>2</sup> Plants not growing among mosses.

B.<sup>1</sup> Lamellae much crisped; margin of pileus finally up-  
turned. S. 16: 103; Bot. Gaz. 28: 272; H. 278.

*G. crispa* Longyear

B.<sup>2</sup> Lamellae straight and regular, not crisped in fresh  
plants.

C.<sup>1</sup> Pileus mealy or granular, finally expanded, margin  
persistently striate. H. 277; J. M. 12: 148.

*G. kellermani* Peck

C.<sup>2</sup> Pileus not distinctly mealy, seldom fully expanded.

D.<sup>1</sup> Stipe usually straight or nearly so; lamellae  
broad or pileus more than 1 cm. across.

E.<sup>1</sup> Pileus even or very faintly striatulate, usu-  
ally 2 cm. or more across, ovate- campan-  
ulate; lamellae very broad; stipe usually  
more than 8 cm. tall. S. 862; P. R. 46:  
64; St. 292; H. 279.....*G. ovalis* Fr.

E.<sup>2</sup> Pileus striate, usually less than 2 cm. broad;  
stipe usually less than 7 cm. tall.

F.<sup>1</sup> Stipe glabrous; pileus broadly conic-  
campanulate; lamellae rather broad.

S. 860; St. 291; H. 276; P. R. 46;  
63; M. 109; Mc. 300.

*G. tenera* Schaeff.

F.<sup>2</sup> Stipe not glabrous.

G.<sup>1</sup> Stipe pruinose; lamellae very narrow; pileus narrowly conical. S. 860; P. R. 46: 62; H. 276; St. 291; Mc. 299.....*G. lateritia* Fr.

G.<sup>2</sup> Stipe and usually pileus with minute, erect pubescence when moist.

*G. tenera pilosella* Pers.

D.<sup>2</sup> Stipe flexuous; lamellae narrow or pileus less than 1 cm. broad.

E.<sup>1</sup> Pileus grayish or ferruginous, less than 1 cm. broad.

F.<sup>1</sup> Pileus striatulate when moist; lamellae subdistant; stipe pale brownish. S. 16: 105; B. T. 26: 66.

*G. capillaripes* Peck

F.<sup>2</sup> Pileus even; lamellae close; stipe pallid. S. 862; M. 109.....*G. siliginea* Fr.

E.<sup>2</sup> Pileus yellowish, about 4 cm. broad, margin deeply striate. S. 867..*G. tortipes* Mont.

#### TUBARIA W. SMITH.

Pileus somewhat viscid, margin striate when moist, glabrous; stipe dark brown. S. 876; M. 109; St. 300.

*T. inquilina* Fr.

Pileus hygrophanous, margin furfuraceous from seceding veil; stipe pallid. S. 872; M. 109; St. 297.

*T. furfuracea* Pers.

#### CREPIDOTUS FR.

A.<sup>1</sup> Pileus bright cinnabar-red; edge of lamellae red. B. T. 22: 489; Oh. Nat. 10: 178.....*C. cinnabarinus* Peck

- A.<sup>2</sup> Pileus not bright red; edge of lamellae not reddish.
- B.<sup>1</sup> Pileus glabrous; or villous at base only.
- C.<sup>1</sup> Lamellae broad, rounded behind. S. 883; P. R. 39:71 ..... *C. malachius* B. & C.
- C.<sup>2</sup> Lamellae linear, subdecurrent. S. 877; M. 110; H. 280; St. 301 ..... *C. mollis* Schaeff.
- B.<sup>2</sup> Pileus pubescent, tomentose or somewhat scaly.
- C.<sup>1</sup> Pileus white.
- D.<sup>1</sup> Pileus 3-6 mm. broad, slightly pubescent, striatulate when moist; lamellae very broad, extending beyond margin of pileus; spores globose. B. T. 26:66..... *C. latifolius* Peck
- D.<sup>2</sup> Pileus 8-20 mm. broad, villous, not striatulate; lamellae rather broad, not extending beyond margin of pileus; spores subelliptic. S. 888; P. R. 39:72; M. 110; H. 279; A. 160.  
*C. versutus* Peck
- C.<sup>2</sup> Pileus not white.
- D.<sup>1</sup> Pileus appressed-scaly, ochraceous-brown; lamellae bright buff or orange then ochraceous. S. 886; M. 110..... *C. crocophyllus* Berk.
- D.<sup>2</sup> Pileus fibrillose-tomentose, reddish-yellow; lamellae yellowish then brownish-ochraceous. S. 883, P. R. 39:73; M. 110.... *C. dorsalis* Peck

# CORTINARIUS FR.

- A.<sup>1</sup> Pileus viscid or glutinous.
- B.<sup>1</sup> Stipe solid.
- C.<sup>1</sup> Stipe equal or nearly so, not bulbous.
- D.<sup>1</sup> Stipe viscid or glutinous; pileus orange-tawny; lamellae at first bluish-gray. S. 916; H. 293; St. 2:17; A. 161; Mc. 313.  
*C. collinitus* (Pers.) Fr.
- D.<sup>2</sup> Stipe dry; pileus yellow or tan; lamellae at first whitish. S. 890; H. 291; Mc. 309; St. 2:3.  
*C. turmalis* Fr.



C.<sup>2</sup> Stipe bulbous.

D.<sup>1</sup> Flesh violaceous, blue or bluish.

E.<sup>1</sup> Flesh and lamellae becoming purplish when bruised; pileus usually 10 cm. or more broad. S. 902; H. 291; Mc. 311; St. 2:10 .....*C. purpurascens* Fr.

E.<sup>2</sup> Flesh and lamellae not changing color when bruised; pileus less than 10 cm. broad.

F.<sup>1</sup> Pileus at first blue, becoming in part yellowish or tan; spores less than 12 microns long, even. S. 902; H. 292; M. 178; Mc. 311; St. 2:9.

*C. coerulescens* Fr.

F.<sup>2</sup> Pileus yellow to tawny; spores more than 12 microns long, tuberculate. H. 302 .....*C. atkinsonianus* Kauff.

D.<sup>2</sup> Flesh white or whitish.

E.<sup>1</sup> Bulb of stipe marginate, depressed; lamellae serrate; stipe white. S. 902; M. 178; St. 2:9 ...*C. calochrous* (Pers.) Fr.

E.<sup>2</sup> Bulb not marginate; lamellae entire; stipe yellowish. S. 892; H. 292; M. 178; Mc. 309; St. 2:4 ...*C. varius* (Schaeff.) Fr.

B.<sup>2</sup> Stipe stuffed or hollow; pileus yellow or olivaceous, flesh paler; lamellae whitish to pale cinnamon. H. 291 .....*C. olivaceo-stramineus* Kauff.

A.<sup>2</sup> Pileus dry or moist only; not viscid or glutinous.

B.<sup>1</sup> Margin of pileus even.

C.<sup>1</sup> Stipe solid.

D.<sup>1</sup> Plants (pileus or lamellae, or both,) some shade of violaceous, purple or lilac, at least when young.

E.<sup>1</sup> Lamellae distant or subdistant.

F.<sup>1</sup> Stipe always distinctly bulbous; whole plant dark violet; pileus with persistent hairy scales. S. 924; H. 296; M. 178; A. 161; Mc. 314; St. 2:23.

*C. violaceus* (Linn.) Fr.

F.<sup>2</sup> Stipe becoming clavate or attenuate, not distinctly bulbous; pileus silky or squamulose.

G.<sup>1</sup> Lamellae rather narrow; stipe not sheathed; pileus whitish, tinged with lilac. S. 925; H. 295; M. 178; Mc. 316; St. 2:24.

*C. albo-violaceus* (Pers.) Fr.

G.<sup>2</sup> Lamellae broad; stipe sheathed with universal veil; pileus brick-color or purplish-brown to paler. S. 950; St. 2:40. . . . . *C. torvus* Fr.

E.<sup>2</sup> Lamellae close.

F.<sup>1</sup> Whole plant lilac. S. 926; H. 296; Mc. 316; P. R. 26:61.

*C. lilacinus* Peck

F.<sup>2</sup> Pileus ferruginous or tawny; stipe whitish; pileus slightly viscid. S. 892; St. 2:4; H. 292; Mc. 309; M. 178 . . . . . *C. varius* (Schaeff.) Fr.

D.<sup>2</sup> Plants without purple, lilac or violet shades.

E.<sup>1</sup> Stipe not bulbous; pileus yellowish to whitish; lamellae clay-colored. S. 935; H. 299; A. 163; St. 2:29.

*C. ochroleucus* (Schaeff.) Fr.

E.<sup>2</sup> Stipe bulbous.

F.<sup>1</sup> Pileus brick-colored; stipe reddish with one to four zones from universal veil; plants with odor of radish. S. 952; H. 311; Mc. 323; St. 2:43.

*C. armillatus* (Alb. & Schw.) Fr.

F.<sup>2</sup> Plant some shade of yellow; stipe not zoned; inodorous.

G.<sup>1</sup> Pileus saffron-yellow, with erect brown squamules; stipe sheathed by universal veil. H. 304.

15. *C. croccocolor* Kauff.

G.<sup>2</sup> Pileus rusty-yellow, fibrillose only;  
stipe not sheathed. S. 932; H.  
294; Mc. 319; P. R. 23:109.

*C. autumnalis* Peck

C.<sup>2</sup> Stipe stuffed or hollow.

D.<sup>1</sup> Lamellae close.

E.<sup>1</sup> Whole plant blood-red; with odor of rad-  
ish. S. 940; Mc. 321; St. 2:24.

*C. sanguineus* (Wulf.) Fr.

E.<sup>2</sup> Plants not as above.

F.<sup>1</sup> Stipe yellow, slender; pileus umbonate  
or obtuse. S. 941; H. 207; A. 162;  
Mc. 322; St. 2:35.

*C. cinnamomeus* (Linn.) Fr.

F.<sup>2</sup> Stipe lilac-tinged at apex, white below,  
rather stout; pileus convexo-plane. S.  
971; H. 305-6; Mc. 325; St. 2:55.

*C. castaneus* (Bull.) Fr.

D.<sup>2</sup> Lamellae distant; pileus reddish-yellow. S. 974.

*C. rubidus* Mont.

B.<sup>2</sup> Margin of pileus sulcate. S. 957....*C. robinsonii* Mont.

## PAXILLUS FR.

Stipe very short or wanting; pileus and lamellae yellow or yel-  
lowish. S. 989; St. 2:69; M. B. 1<sup>st</sup>:32; A. 170; M. 179.

*P. panuoides* Fr.

Stipe present; pileus brown or reddish-brown.

Stipe with brown or blackish tomentum; lamellae adnate  
or slightly decurrent. S. 988; Mc. 329; M. B. 1<sup>st</sup>:31;  
St. 2:68; A. 169; H. 288.

*P. atrotomentosus* (Batsch) Fr.

Stipe not tomentose; lamellae decurrent.

Pileus somewhat viscid, margin at first with grayish  
down, otherwise glabrous; lamellae close. S. 987;  
St. 2:68; M. B. 1<sup>st</sup>:30, H. 287; A. 166; Mc. 328.

*P. involutus* (Batsch) Fr.

Pileus dry, minutely tomentose; lamellae subdistant. S. 1139; A. 167; H. 289; Mc. 394.

*P. rhodoxanthus* (Schw.) Atk.

# NOTES.

*P. porosus* Berk. (S. 991; M. 179) is usually known as *Boletinus porosus* (Berk.) Peck. It is also known as *Boletinellus merulioides* (Schw.) Murrill. N. Am. Flora 9<sup>3</sup>: 158.

*P. rhodoxanthus* is difficult to place satisfactorily. It is sometimes known as *Gomphidius rhodoxanthus*, but *Gomphidius* has a glutinous universal veil, while this species is never glutinous. *Flammula*, *Phylloporus*, and *Boletinus* have each been proposed as the proper genus for it. *P. davidus* Berk. (S. 987; M. 179) is probably the same plant.

## BOLBITIUS FR.

A.<sup>1</sup> Pileus viscid when moist.

B.<sup>1</sup> Pileus striate or sulcate; lamellae not decurrent.

C.<sup>1</sup> Young pileus pure white, sordid with age. Myc.

Notes 1:18 .....*B. sordidus* Lloyd

C.<sup>2</sup> Pileus not white.

D.<sup>1</sup> Pileus sulcate, brown or brownish, 4-6 cm.; lamellae free. S. 14: 156; Jour. Cin. Soc. Nat. Hist. 18: 36. ....*B. radians* Morg.

D.<sup>2</sup> Pileus striate only, yellow, usually less than 4 cm.; lamellae adnexed. S. 1074; H. 346; St. 362. ....*B. fragilis* (L.) Fr.

B.<sup>2</sup> Pileus not striate or sulcate; lamellae decurrent. S. 1077.

*B. macrorrhizus* B. & Mont.

A.<sup>2</sup> Pileus not viscid.

B.<sup>1</sup> Pileus yellow, not striate; lamellae adnexed. S. 1075; M. 177; St. 362. ....*B. titubans* (Bull.) Fr.

B.<sup>2</sup> Pileus cinereous, striate; lamellae free. S. 1113; M. 176; P. R. 29: 41. ....*B. pulchrifolius* (Peck) Mass.

NOTE.

Lloyd thinks *Bolbitius radians* the same plant as *Pluteolus coprophilus*.

AGARICUS LINN.

(*Psalliota* Fr.)

- A.<sup>1</sup> Pileus distinctly brown or tawny.
  - B.<sup>1</sup> Whole surface of pileus tawny-brown, fibrillose-scaly.  
S. 1000; St. 307; Mc. 334; M. 112; P. R. 36:48.  
*A. silvaticus* Schaeff.
  - B.<sup>2</sup> Pileus white or whitish with numerous minute brown  
scales, disk usually brown and smooth. S. 1003; P.  
R. 36:48; Mc. 345; H. 315; A. 23.  
*A. placomyces* Peck
- A.<sup>2</sup> Pileus (except for scales if present) white or whitish or  
somewhat yellowish; rarely brownish, never tawny.
  - B.<sup>1</sup> Mature pileus usually more than 4 cm. broad.
    - C.<sup>1</sup> Stipe solid. S. 994; P. R. 36:45; H. 308; Mc. 336;  
A. 20.....*A. rodmani* Peck
    - C.<sup>2</sup> Stipe stuffed or hollow.
      - D.<sup>1</sup> Plants occurring in grassy or open fields, etc.
        - E.<sup>1</sup> Veil large, double; lamellae long whitish or  
pallid. S. 994; St. 305; P. R. 36:46; H.  
310; Mc. 341; A. 21; M. 111.  
*A. arvensis* Schaeff.
        - E.<sup>2</sup> Veil scant, usually lacerate; lamellae soon  
pink. S. 997; St. 306; P. R. 36:42; Mc.  
332; H. 307; A. 18; M. 112.  
*A. campester* Linn.
      - D.<sup>2</sup> Plants growing in woods or groves.
        - E.<sup>1</sup> Pileus with small brown scales, disk smooth,  
brown. S. 1003; Mc. 345; P. R. 36:48;  
H. 315; A. 23.....*A. placomyces* Peck
        - E.<sup>2</sup> Pileus glabrous or slightly silky, whitish, or  
yellowish in center.

- F.<sup>1</sup> Bulb of stipe oval. S. 998; Mc. 343;  
St. 307; P. R. 36:47; H. 309; A. 22.  
*A. silvicola* Vitt.  
F.<sup>2</sup> Bulb of stipe flattened. M. S. M. 163;  
H. 311.....*A. abruptibulbus* Peck  
B.<sup>2</sup> Pileus usually less than 4 cm. broad, very thin, pale yellow. S. 1006; Mc. 334; St. 308; H. 313; A. 24; Myc.  
Notes 1:28.....*A. comtulus* Fr.

#### NOTES.

*A. arvensis* and *A. silvicola* are sometimes regarded as varieties of *A. campester*.

A brown variety of *A. campester* occurs but is not common. This species is reported as usually occurring from August to October while *A. rodmani* is said to occur in May and June.

*A. xylogenus* Mont. (S. 1010), described from Sullivan's material is not an *Agaricus* in the present limitation of the term. It is probably a yellow form of *Lepiota cepaestipes*. *A. foederatus* B. & M. (S. 1003), also described from Sullivan's material, is said to have the lamellae affixed and the spores brown. It is, therefore, either a *Pholiota* or a *Stropharia*. Morgan refers it to the latter genus.

*A. fabaceus* Berk. (S. 994; M. 111), described from Lea's material, is reported common by Morgan, while Lloyd says it has not been recognized in the last fifty years. The pileus was described as being viscid.

*A. abruptibulbus* is described as white, becoming yellowish in drying. Plants collected at Oxford and referred by the writer to this species (Ohio Nat. 10: 178) were tawny even when young but had the bulbous stipe of the above species. Plants collected at Columbus in September, 1910, are similar in every respect except that the stipe is not distinctly bulbous. These have been referred to *A. silvaticus* which European writers describe as brown or tawny. The Oxford plants are for the present regarded as a bulbous form of *A. silvaticus*.

STROPHARIA FR.

A.<sup>1</sup> Pileus viscid or glutinous.

B.<sup>1</sup> Plants growing on dung or richly manured ground.

C.<sup>1</sup> Pileus at first conical then expanded and umbonate.

S. 1021; P. R. 30:41; J. M. 14:72.

*S. umbonatescens* Peck

C.<sup>2</sup> Pileus at first hemispherical, not umbonate; stipe viscid.

D.<sup>1</sup> Pileus soon expanded; stipe stuffed with a pith.

S. 1021; A. 32; H. 322; St. 314; Mc. 350;

J. M. 14:71; M. 113.....*S. stercoraria* Fr.

D.<sup>2</sup> Pileus never fully expanded; stipe fistulous. S.

1022; St. 314; Mc. 351; M. 113; A. 31; J. M.

14:71; H. 321.....*S. semiglobata* Batsch

B.<sup>2</sup> Plants growing on wood or on the ground, not on dung.

C.<sup>1</sup> Stipe hollow, viscid; pileus with bluish-green gluten, at least when young. S. 1013; St. 309; Mc. 349;

M. 112; A. 32; J. M. 14:74; H. 322.

*S. aeruginosa* Curt.

C.<sup>2</sup> Stipe solid; pileus viscid, ochraceous. J. M. 14:73.

*S. drymonia* Morg.

A.<sup>2</sup> Pileus neither viscid nor glutinous.

B.<sup>1</sup> Pileus glabrous, even, ochraceous. H. 321; J. M. 12:

194; J. M. 14:69.....*S. hardii* Atk.

B.<sup>2</sup> Pileus with minute white scales, fulvous; margin striate.

S. 1003; Mc. 339; J. M. 14:70.

*S. foederata* B. & Mont.

NOTES.

*S. micropoda* Morgan Jour. Myc. 14:73, does not seem distinct from *Flammula polychroa* which has a veil in young plants. Remnants of the veil usually mark its position on the stipe.

Morgan reports *S. submerdaria* Britz. from Preston, O. Britzelmayr's description is not available except the very short one in Saccardo (11:71). *S. aeruginosa* is given by Morgan as *S. viridula* Schaeff.



HYPHOLOMA FR.

A.<sup>1</sup> Pileus glabrous except that sometimes cobwebby remnants of the veil occur on the margin.

B.<sup>1</sup> Pileus hygrophanous.

C.<sup>1</sup> Lamellae dark violaceous in very young plants, adnexed. S. 1038; St. 322; A. 28; Mc. 363; J. M. 14: 29; M. 114.....*H. candolleianum* Fr.

C.<sup>2</sup> Lamellae long remaining white or whitish, adnate or mostly so.

D.<sup>1</sup> Pileus brown or tawny when fresh. S. 1039; St. 323; Mc. 363; A. 27; J. M. 14: 27; H. 325; M. 114.....*H. appendiculatum* Bull.

D.<sup>2</sup> Pileus whitish or yellowish. S. 1042; P. R. 29: 40; J. M. 14: 27; H. 323; Mc. 362.

*H. incertum* Peck

B.<sup>2</sup> Pileus not hygrophanous.

C.<sup>1</sup> Pileus yellow or tinged tawny; lamellae sulfur-yellow then green. S. 1029; St. 318; J. M. 14: 31; Mc. 357; M. 114.....*H. fasciculare* Huds.

C.<sup>2</sup> Pileus red or brownish-red.

D.<sup>1</sup> Taste bitter; mature lamellae sooty-olive. S. 1028; St. 323; Mc. 359; A. 26; J. M. 14: 31; H. 326; M. 114....*H. sublateritium* Schaeff.

D.<sup>2</sup> Taste not bitter; mature lamellae purple-brown. S. 1028; H. 327; P. R. 49: 61.

*H. perplexum* Peck

A.<sup>2</sup> Pileus innately fibrillose or scaly.

B.<sup>1</sup> Pileus hygrophanous; at first velvety or tomentose, becoming glabrous; lamellae black-spotted. S. 1034; St. 321; J. M. 14: 66; Mc. 360; M. 114.

*H. velutinum* Pers.

B.<sup>2</sup> Pileus not hygrophanous; lamellae not black-spotted.

C.<sup>1</sup> Flesh and veil white; pileus whitish to brown. S. 1033; St. 320; Mc. 361; A. 28; H. 325; M. 114.

*H. lacrymabundum* Fr.

C.<sup>2</sup> Flesh and veil tawny; pileus tawny-red. S. 1034; St. 320; M. 114; J. M. 14: 66.

*H. pyrotrichum* Holmsk.

#### NOTES.

*H. perplexum* is regarded by a number of writers as not specifically distinct from *H. sublateritium*. *H. incertum* is sometimes regarded as a variety of *H. candolleianum*.

Morgan lists *H. candolleianum* as *H. mutabile* Fl. D. and *H. sublateritium* as *H. lateritium* Schaeff.

*H. comaropsis* Mont. (S. 1036), described from Sullivant's material has not since been recognized.

#### PILOSACE FR.

A single species, *P. erinia* Peck, is reported. The pileus is dark brown and smooth; lamellae free, dull red to brown. The spores are said to be reddish. S. 1012; P. R. 24: 70; M. B. 75: 25; H. 319; J. M. 13: 254.

#### PSILOCYBE FR.

A.<sup>1</sup> Plants growing in sand; stipe clavate. S. 1050; St. 327; J. M. 13: 145; H. 330.....*P. ammophila* Dur. & Lev.

A.<sup>2</sup> Plants not growing in sand; stipe not clavate.

B.<sup>1</sup> Pileus campanulate or somewhat convex at maturity; plants growing in grassy places. S. 1055; St. 331; H. 328; A. 48; J. M. 13: 248.....*P. foenisecii* Pers.

B.<sup>2</sup> Pileus convex to plane; plants on wood or on ground among leaves.

C.<sup>1</sup> Pileus brown when moist; lamellae adnexed, crowded. S. 1052; St. 329; H. 329; Mc. 365; J. M. 13: 247.....*P. spadicea* Schaeff.

C.<sup>2</sup> Pileus livid; lamellae adnate. S. 1053; St. 330; J. M. 13: 250.....*P. cernua* Vahl.

#### NOTES.

*P. spadicea* has not been definitely reported from Ohio although it doubtless occurs here.

*P. rhodophaea* Mont. (S. 1050; J. M. 13: 249), *P. pulicosa* Mont. (S. 1056; J. M. 13: 249), and *P. sullivantii* Mont. (S. 1047; J. M. 14: 69) have not been recognized since 1856.

PSATHYRA FR.

A.<sup>1</sup> Plant not violaceous.

B.<sup>1</sup> Pileus umbonate. S. 1069; J. M. 13: 152.

*P. subnuda* Karst.

B.<sup>2</sup> Pileus not umbonate.

C.<sup>1</sup> Pileus striate; stipe arising from mycelial bulb; growing in sand. J. M. 13: 152.

*P. miamensis* Morg.

C.<sup>2</sup> Pileus even; stipe nearly equal; not growing in sand. S. 16: 126; J. M. 13: 152; B. T. 26: 68.

*P. microsperma* Peck

A.<sup>2</sup> Whole plant violaceous. S. 1063; J. M. 13: 151.

*P. pholidota* Mont.

COPRINUS FR.

A.<sup>1</sup> Lamellae crowded; substance of pileus rather thick and fleshy; pileus often striate but not plicate.

B.<sup>1</sup> Pileus scaly or floccose-villous or nearly glabrous, not atomate or mealy.

C.<sup>1</sup> Scales of pileus small or medium, formed by breaking up of surface of pileus.

D.<sup>1</sup> Pileus at first cylindrical; white, shaggy; stipe annulate. S. 1079; St. 348; Mc. 370; H. 332;

A. 33-40; M. 173.....*C. comatus* Fr.

D.<sup>2</sup> Pileus at first ovoid.

E.<sup>1</sup> Pileus cinerous, scales reddish-brown; stipe with similar scales, annulate. S. 1081; M.

173; pl. 8.....*C. squamosus* Morg.

E.<sup>2</sup> Scales of pileus not reddish-brown; stipe not scaly.

F.<sup>1</sup> Plants growing on fallen trunks or stumps; pileus grayish-brown. S.

1083; M. 174; St. 350; Mc. 374.

*C. fuscescens* (Schaeff.) Fr.

F.<sup>2</sup> Plants not growing on trunks.

G.<sup>1</sup> Spores smooth; plants in rich soil and grassy places; pileus grayish-brown to lead-colored. S. 1081; St. 350; H. 333; A. 40; Mc. 373; M. 174.

*C. atramentarius* (Bull.) Fr.

G.<sup>2</sup> Spores rough; plants growing about stumps in woods; pileus grayish-brown. S. 1082; P. R. 26:60; M. 175 ..... *C. insignis* Peck

C.<sup>2</sup> Scales of pileus large, superficial; formed by breaking apart of the universal veil; or pileus densely villous or mealy-floccose.

D.<sup>1</sup> Stipe annulate, at least when young; plants on stumps, soil or old leaves.

E.<sup>1</sup> Scales of pileus ochraceous. S. 1082; P. R. 25:79; M. 174..... *C. variegatus* Peck

E.<sup>2</sup> Scales of pileus white. S. 14:158; H. 330; B. T. 22:491..... *C. bulbosus* Peck

D.<sup>2</sup> Stipe not annulate; plants usually on dung.

E.<sup>1</sup> Pileus cylindrical to conic. S. 1087; St. 352; H. 338; Mc. 376..... *C. finctarius* Fr.

E.<sup>2</sup> Pileus ovate to campanulate.

F.<sup>1</sup> Pileus and stipe downy-villous, at least when young, white; lamellae adnexed. S. 1088; St. 353; Mc. 378; M. 175.

*C. niveus* (Pers.) Fr.

F.<sup>2</sup> Pileus buff to darker, with large scales; stipe nearly glabrous; lamellae free. S. 16:130; B. T. 26:68.

*C. lacceratus* Peck

B.<sup>2</sup> Pileus with sparkling atoms or with mealy particles, at least when young.

C.<sup>1</sup> Lower part of stipe floccose-downy, plants on dung or ground. S. 1106; Mc. 382; P. R. 24:71; M. 175..... *C. semilanatus* Peck

C.<sup>2</sup> Stipe not floccose-downy; plants not on dung.

D.<sup>1</sup> Pileus with sparkling atoms, yellowish-brown; usually on ground about stumps; common. S. 1090; St. 354; Mc. 378; H. 335; M. 175.

*C. micaceus* (Bull.) Fr.

D.<sup>2</sup> Pileus floccose-mealy; usually on trunks or stumps of trees.

E.<sup>1</sup> Lamellae broad. S. 1083; St. 350; Mc. 374;

M. 174. . . . . *C. fuscescens* (Schaeff.) Fr.

E.<sup>2</sup> Lamellae narrow; plants usually growing from patch of brown mycelium (*Ozonium*). S. 1092; St. 355.

*C. radians* (Desm.) Fr.

A.<sup>2</sup> Lamellae distant or subdistant; pileus very thin, plicate-sulcate; usually growing on dung or richly manured ground.

B.<sup>1</sup> Pileus less than 1 cm. broad.

C.<sup>1</sup> Lamellae free. S. 1101; St. 358; M. 176.

*C. radiatus* (Bolt.) Fr.

C.<sup>2</sup> Lamellae attached. S. 1106; St. 359; Mc. 382; H. 337. . . . . *C. ephemerus* Fr.

B.<sup>2</sup> Pileus usually more than 1 cm. broad.

C.<sup>1</sup> Lower part of stipe floccose-downy. S. 1106; P. R. 24: 71; M. 175; Mc. 382. . . . . *C. semilanatus* Peck

C.<sup>2</sup> Stipe glabrous or nearly so.

D.<sup>1</sup> Lamellae free. S. 1100; St. 358; M. 176.

*C. nycthemerus* Fr.

D.<sup>2</sup> Lamellae attached.

E.<sup>1</sup> Spores angled or angular. S. 1113; P. R. 26: 60. . . . . *C. angulatus* Peck

E.<sup>2</sup> Spores elliptical.

F.<sup>1</sup> Disk of pileus raised; lamellae attached to stipe. S. 1106; St. 359; Mc. 382; H. 337. . . . . *C. ephemerus* Fr.

F.<sup>2</sup> Disk at length depressed; pileus bluish-gray, disk brownish or rufescent; lamellae united to a collar at apex of stipe. S. 1108; St. 359; Mc. 383; M. 176. . . . . *C. plicatilis* (Curt.) Fr.

## NOTES.

*C. fimetarius* and *C. ephemerus* have not been definitely reported from Ohio.

*C. insignis* is said to resemble *C. atramentarius* and to differ from it in the roughened spores (P. R. 26:60). It may be only a variety.

*C. radians* in Europe is said to occur on moist plaster walls. The only reference to it in Ohio gives it as occurring on trunks of trees (Myc. Notes 1:145). It is probably the same plant referred by Lea and Morgan to *C. fuscescens*.

A specimen labeled *C. angulatus* and collected by Lloyd at Cincinnati is in the state herbarium at Albany.

*C. berkleyi* and *C. stenophyllus*, described from Sullivan's material by Montagne, are omitted (S. 1094, S. 1095).

## ANELLARIA KARST.

The species of this genus were separated from *Panaeolus* on account of the zone or annulus about the stipe. Only one species, *A. fimiputris* (Bull.) Karst., has been reported from Ohio. S. 1126; St. 339; J. M. 13: 62; M. 116.

## PANAEOLOUS FR.

A.<sup>1</sup> *Pileus viscid.*

B.<sup>1</sup> Stipe annulate or zoned; pileus at first conical, lead-colored. S. 1126; St. 339; M. 116; J. M. 13:62.

*P. fimiputris* Bull.

B.<sup>2</sup> Stipe not annulate; pileus at first campanulate, pale tan. S. 1119; St. 339; J. M. 13: 62. . . . *P. phalaenarum* Fr.

A.<sup>2</sup> *Pileus not viscid.*

B.<sup>1</sup> *Pileus* white, whitish or grayish when fresh, sometimes yellowish in age.

C.<sup>1</sup> *Pileus* usually 5-8 cm. broad; stipe solid. S. 1123; Mc. 385; H. 343; M. 116; J. M. 13:60; P. R. 23.

*P. solidipes* Peck

C.<sup>2</sup> Pileus usually less than 3 cm. broad; stipe hollow.

S. 1122; St. 341; Mc. 386; H. 344; J. M. 13:59.

*P. papilionaceus* Fr.

B.<sup>2</sup> Pileus tan to smoky-black, etc., not white.

C.<sup>1</sup> Pileus with brown or blackish zone about the margin.

D.<sup>1</sup> Pileus conical, acutely umbonate. S. 1124; St.

342; J. M. 13:59.....*P. acuminatus* Fr.

D.<sup>2</sup> Pileus campanulate, not umbonate. S. 1124; St.

342; Mc. 385; J. M. 13:59; M. 116; H. 342.

*P. fimicola* Fr.

C.<sup>2</sup> Pileus not zoned about the margin.

D.<sup>1</sup> Pileus moist or hygrophanous.

E.<sup>1</sup> Pileus sooty-black when moist, not reticulate.

S. 1121; St. 340; J. M. 13:60.

*P. sphinctrinus* Fr.

E.<sup>2</sup> Pileus tan or brown, usually pink-tinged, reticulate-rugose. S. 1120; St. 340; A.

45; H. 339; Mc. 384; J. M. 13:61.

*P. retirugis* Fr.

D.<sup>1</sup> Pileus dry, not hygrophanous.

E.<sup>1</sup> Pileus hemispherical; lamellae very broad.

S. 1122; St. 341; Mc. 386; H. 344; J. M.

13:59.....*P. papilionaceus* Fr.

E.<sup>2</sup> Pileus campanulate. S. 1121; St. 340; Mc.

386; J. M. 13:60; H. 342; M. 116.

*P. campanulatus* Linn.

# NOTES.

*P. fimiputris* is often placed in the genus *Anellaria*.

*P. phalaenarum* has not been definitely reported from Ohio.

## PSATHYRELLA FR.

A.<sup>1</sup> Pileus sulcate or plicate-sulcate.

B.<sup>1</sup> Pileus less than 15 mm. broad, whitish to cinereous; common. S. 1134; St. 346; Mc. 391; J. M. 13:54; H.

347; A. 48; M. 117.....*P. disseminata* Pers.



B.<sup>2</sup> Pileus usually more than 15 mm. broad, yellow or rufescent when fresh. S. 1134; St. 346; J. M. 13:57.

*P. crenata* Lasch

A.<sup>2</sup> Pileus striate or striatulate, not sulcate.

B.<sup>1</sup> Pileus with tufts of hair at least when young, brown or reddish-brown. S. 14:163; H. 348; J. M. 13:55;

P. R. 50:107.....*P. hirta* Peck

B.<sup>2</sup> Pileus not hairy-tufted.

C.<sup>1</sup> Lamellae close; plants odorous. S. 1136; P. R. 24:70; J. M. 13:54.....*P. odorata* Peck

C.<sup>2</sup> Lamellae rather distant.

D.<sup>1</sup> Pileus campanulate, sprinkled with shining particles. S. 1132; St. 346; Mc. 390; J. M. 13:57; M. 117.....*P. atomata* Fr.

D.<sup>2</sup> Pileus conical, not atomate, stipe naked. S. 1127; St. 343; Mc. 389; J. M. 13:56; M. 117.

*P. gracilis* Pers.

#### NOTE.

*P. falcifolia* and *P. rupicola*, described from Sullivant's material by Montagne, are omitted. (See S. 1129, 1134, and J. M. 13:55.)

GLOSSARY.

*Acrid*, bitter, peppery.

*Adnate*, attached squarely to stipe (of lamellae).

*Adnixed*, slightly attached to stipe, or by upper corner only (of lamellae).

*Alliaceous*, of onions or garlic.

*Annulus*, the ring on the stipe of some Agarics, formed by the separation of the partial veil from margin of pileus.

*Appendiculate*, hanging in small fragments from margin of pileus (of veil).

*Appressed*, applied closely to the surface.

*Arachnoid*, like a cobweb.

*Areolate*, divided into little areas.

*Azonate*, without zones.

*Bay*, dark reddish-chestnut color.

*Buff*, light, dull brownish-yellow.

*Campanulate*, bell-shaped.

*Capillary*, hair-like.

*Cespitose*, growing in tufts or clumps, stipes usually more or less united at base.

*Cinereous*, ash-gray or light bluish-gray.

*Clavate*, club-shaped.

*Conchate*, shell-shaped.

*Concolorous*, used of the stipe when it is of the same color as the pileus.

*Conidium*, a non-sexual spore cut off from the end of a hypha or hyphal branch.

*Context*, substance of pileus (or stipe); flesh.

*Costate*, ridged or ribbed.

*Crenulate*, with fine rounded notches along the edge.

*Decurrent*, extending down the stipe.

*Deliquescent*, becoming liquid.

*Denticulate*, with small teeth or projections along the edge.

*Depressed*, slightly sunken (of center of pileus).

*Dichotomous*, regularly forked into two.

*Disk*, central portion of pileus.

*Eccentric*, not attached at center of pileus (of stipe).

*Echinulate*, minutely roughened (of spores).

*Emarginate*, with a deep notch at point of attachment to stipe (of lamellae); sinuate.

*Even*, not wrinkled, sulcate, striate or pitted, etc.

*Explanate*, becoming expanded, flattened.

*Farinaceous*, mealy, somewhat powdery (of surfaces); resembling flour or meal (of odors).

*Ferruginous*, of the color of iron-rust, rust-red.

*Fibrillose*, with fibrils.

*Filiform*, thread-like.

*Fistulous*, tubular, hollow.

*Flesh*, inner substance of pileus or stipe; context.

*Floccose*, downy, woolly; with woolly locks.

*Floccose Trama*, see *Trama*.

*Flocculose*, minutely floccose.

*Free*, not attached to stipe (of lamellae).

*Fuliginous*, dark smoke-color, smoky-brown.

*Fulvous*, yellowish-brown, tawny, or yellow-gray-brown.

*Furfuraceous*, with small scurfy scales.

*Fuscous*, brown or grayish-black.

*Fusiform*, spindle-shaped.

*Gills*, see *Lamella*.

*Glabrous*, without scales, hairs or pubescence; smooth.

*Glutinous*, covered with a thick sticky or slimy coat.

*Granular*, *Granulose*, covered with granules.

*Hirsute*, covered with stiff hairs.

*Hydrophanous*, having a watery appearance when moist and becoming paler and opaque in drying.

*Hymenium*, spore-bearing surface, covering the lamellae in *Agarics*.

*Hypha*, one of the elongated cells or filaments of which a fungus is composed.

*Infundibuliform*, funnel-shaped.

*Innate*, originating with, or blending with the substance of a part.

*Inserted*, growing from the substratum without a basal disk and not woolly or tomentose at the base; mycelium within the substratum and invisible.

*Insititious*, inserted.

*Involute*, rolled inward.

*Lamella*, one of the leaf-like plates on the under side of the pileus of an Agaric; a gill.

*Lateral*, attached to one side of the pileus (of stipe).

*Latex*, the milky or colored juice of certain plants.

*Linear*, very narrow and straight (of lamellae).

*Marginate*, having a well-defined margin.

*Micaceous*, covered with glistening scales.

*Micron*, one one-thousandth of a millimeter.

*Mushroom*, any fleshy fungus of reasonable size.

*Mycelium*, the whole mass of hyphae or fungal threads forming the vegetative portion of a fungus; among the Agarics this gives rise to the sporophore or fruiting structure known as a mushroom or toadstool.

*Ochraceous*, brownish-yellow.

*Ovate*, *Ovoid*, egg-shaped.

*Pallid*, pale, of an undecided color.

*Partial veil*, see *Veil*.

*Pileus*, the cap-like portion of an Agaric, with or without a stipe and bearing the lamellae on the lower side.

*Plicate*, folded like a fan.

*Pruinata*, covered with a bloom or powder.

*Pubescent*, covered with soft, short hairs.

*Pulverulent*, powdery or covered with a powder or dust.

*Punctate*, dotted with points.

*Putrescent*, soon decaying.

*Reniform*, kidney-shaped.

*Resupinate*, attached to the substratum by the back or upper part of the pileus which in this case is not provided with a stipe.

*Rimose*, marked with small cracks.

*Rufescent*, tending to a dull red or reddish color.

*Rugose*, wrinkled.

*Rugulose*, minutely wrinkled.

*Scabrous*, with a rough surface.

*Sclerotium*, a hard, compact, tuber-like body containing stored food.

*Scrobiculate*, marked with small pits or depressions.

*Serrate*, margin with saw-like teeth.

*Serrulate*, minutely serrate.

*Sessile*, without a stipe; pileus attached directly to substratum.

*Sinuate*, with a deep notch at point of attachment to stipe; emarginate (of lamellae).

*Solid*, substance uniform and continuous within, not hollow or stuffed (of stipe).

*Spathulate*, shaped like a spathula or spoon.

*Squamose*, with scales.

*Squamulose*, with small scales.

*Squarrose*, with erect pointed scales.

*Stipe*, stem.

*Striate*, marked with parallel or radiating lines.

*Strigose*, with stiff erect hairs.

*Stuffed* (of stipe), interior filled with a material different from the outer part, usually softer.

*Substratum*, the substance upon or within which a fungus grows.

*Sulcate*, marked with grooves or furrows.

*Toadstool*, a fleshy fungus shaped like an umbrella.

*Tomentose*, more or less densely matted, hairy.

*Trama*, the inner portion of the lamellae or pileus; when made up of interwoven fibers of a uniform diameter, it is said to be *floccose*; when the hyphae are frequently enlarged so as to give, in section, the appearance of rounded cells, it is said to be *vesiculose*.

*Tuberculate*, with raised tubercles or nodules.

*Umber*, olive-brown or dark-brown.

*Umbilicate*, with a central depression or umbilicus, but not funnel-shaped.

*Umbonate*, with a central elevation or umbo.

*Uncinate*, extending down the stipes as a short tooth or hook, but not decurrent.

*Universal Veil*, see *Veil*.

*Veil*, a membrane enclosing the entire mushroom when young (*universal veil*), or extending from stipe to margin of pileus and enclosing the lamellae (*partial veil*).

*Venose*, with swollen lines or wrinkles.

*Ventricose*, swollen in the middle.

*Vesiculose Trama*, see *Trama*.

*Viscid*, covered with a sticky liquid or merely sticky.

*Volva*, the remnant of the universal veil at the base of the stipe as a cup or sheath, or broken into fragments.

*Zonate*, marked with zones or concentric bands.







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